The Builder.

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ILLUSTRATIONS.

Design for a School, submitted in Competition for the Royal Academy Gold Medal.—By Mr. A. E. Corbett, A.R.I.B.A. .. *Double-Page Ink-Photo.*

Small Houses.—Mr. C. E. Bateman, F.R.I.B.A., Architect. (In illustration of Mr. Bateman's Paper at the Architectural Association.)
Two Double-Page Photo-Lithos.

Blocks in Text.

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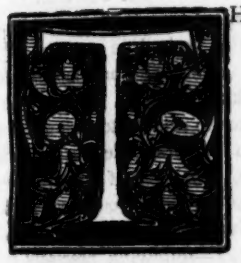
Small Country Houses.



THE architectural treatment of small houses, about which a good deal has been said at the last meeting of the Architectural Association, is perhaps quite as important in its way as the treatment of mansions and Town Halls. It is a subject which brings architecture in touch with the daily life of the large middle class, and is therefore of practical interest in the present; and in regard to the past we know that some of the best and most instructive characteristics of the ancient architecture of this country are to be found in the old farmhouses and cottages in many of the unspoiled rural districts. It is a question, however, whether the study of these remains of the honest and simple construction of our forefathers—a study to which young architects are often exhorted—has had an entirely beneficial effect; though the fault is not so much, perhaps, in the old examples themselves as in the spirit in which they are studied. In almost all cases when a man begins to study and sketch old cottages and small country houses, he develops a desire to make his own new houses resemble them. And here is at once the foundation laid of what we call a false picturesque, produced by an effort to build in accordance with the conditions of a past day and not those of the present day.

We doubt whether Mr. Bateman, in spite of the generally practical turn of his paper, has altogether escaped this influence in the set of designs for small houses which we have been enabled by his kindness to illustrate in the present issue. The plans are practical, but are the elevations such as we can really say are the most natural and practical treatment in relation to the building materials and the building habits of the present day? Are they not influenced by the desire to give somewhat of the feeling and appearance of the old buildings of the same class? Are not the roofs, for instance, steeper, and the windows smaller, than they would naturally be made by any one building entirely without the influence of the old buildings in his mind? And if so, they are not quite a genuine meeting of the problem of the modern small house.

The discussion at the meeting of the Association, which was long, as might be expected from the interest of the subject, has been unavoidably abbreviated in our report, although as it stands it is longer than we are generally able to give; but the short written communication from Mr. Ernest Newton is given *verbatim*, and seems to us to be the most noteworthy contribution to the discussion. Of course we concur entirely with Mr. Newton in his remark that if we think only of the practical side of the question, we may get a "dwelling" but not a home (a remark, by the way, which occurs in almost the same terms in Ibsen's "Master-Builder"). But he makes a protest in the right direction when he insists on the value of substantial construction, even for plain and simple houses; and when he dismisses half-timber work with contempt. The fact is that half-timber work is a pre-railway style of building, for districts where brick and stone abounded not, and the expense of their carriage was prohibitive. As frequently employed in modern would-be picturesque building, as a mere surface decoration with a brick wall behind it, it is of course one of the sorriest of shams. But even as a real construction—thick timber structure with a filling-in of half-brick or lath and plaster, it is an out-of-date matter now; it is not only unnecessary, when we can always get bricks by rail at a low rate of carriage, but it is absolutely at variance with healthfulness and comfort in a country house, as any one may know well enough who has ever experienced the pleasure of getting up and dressing in a bedroom in a real old country half-timber farmhouse, in a sharp frost in midwinter. Mr. Bateman seems to admit that half-timber has had its day, but we observe that it is shown in more than one of his small house designs—whether in the superficial or the structural form we do not know. On the other hand, while we read with refreshment Mr. Newton's remarks in favour of substantial structure, we seem to remember reviewing a book of small houses of his a good many years ago, containing many very charming illustrations of houses which had been erected, which were remarkable for very low cost and—very thin walls.

The fact is that architects, even when they can see that such methods as half-timber are anachronisms, seem to be still afraid of making use of modern materials in country houses, still in pursuit of some imaginary picturesque, which will result from adopting the structure and the outward form and proportions of the small houses of a less sophisticated age. These latter are interesting and picturesque to us now, partly because they are weather-stained, partly because they interest us by association, as representing the taste and fashion of a bygone day. But those very houses *were not picturesque to the men who built them*; they were simply the best practical building of the day. If we want our small houses to be interesting to people two hundred years hence, they must represent the best practical building of our day, *plus* that indefinable something else without which, as Mr. Newton rightly says, they may be "dwellings" but not "homes." But the point is to produce the homelike effect with the best modern materials and construction.

In this respect we read with satisfaction the remarks of Mr. Arnold Mitchell in favour of the use of steel joists and solid floors. The open joist floor no doubt looks very agreeable, and is a solid construction, but it transmits sound to a most inconvenient extent, while the wooden-joisted floor boarded above and ceiled below, unless filled up with silicate or something analogous, is a perpetuation of the conventional absurdity of having our houses full of hollow spaces which no one can get at or inspect, and where we never know what goes on or what dirt accumulates. In this connexion also we must repudiate

entirely Mr. Bateman's hollow walls — in some cases, apparently, if we gather aright, two 4½-in. walls with a space between them. This is flimsy structure, for one thing, but the objection again is also to the hollow space which can never be seen or cleaned out. One of the most important reforms in house building ought to be to get rid of all these hollow spaces which have been consecrated by conventional usage in building; hollow floors, hollow walls, hollows behind skirtings and casings. All these are abominations, and the healthy house, whether in town or country, should be without them.

Speaking generally, then, we think that the small country house which really represents the wants and conditions of the day—as the ancient small house represented those of its own day—will have solid and tolerably thick walls, solid floors, low-pitched roofs, and windows not too small; we admit that it is easy to err on the other side and make them unnecessarily large, a fault often committed, but that is no reason for making windows too small for light and health because they were often so in old houses. If the architect says, "How can such a building be picturesque?" the answer is—it is his business to make it picturesque, to which end Mr. Newton partly suggests the path, viz., by using each material in the way best suited to its nature. You can hardly honestly endeavour to do that without giving character to a house; and the "character" of to-day is what becomes the "picturesque" to a future generation.

In regard to one or two special points either mentioned or illustrated, we may say that, in our opinion, the 9 in. by 9 in. flue is sufficient in small houses except for the kitchen fire, and in a comparatively short chimney will probably draw better than the larger section. For the latter object also, fireplaces, where convenient, are better in internal than in external walls; to which it may be added that as the use of the fire is in winter, the internal position is also the best for comfort, since when it is cold enough to induce people rather to wish to gather round the fire, they also wish to get away from the external walls and towards the interior of the room. In regard to fireplaces we observe a remark by one speaker as to a fireplace in a house by a very eminent architect, which had pockets or shelves at the sides where the soot collected, to the imminent danger of setting the chimney on fire. This is a very common defect in old London houses of a century back, and we have known a house come very near being set on fire by the accumulation of soot catching fire; we are surprised to hear of such a thing in a modern house, but as it seems it has been done (probably in the imitation of an old form of fireplace), it may be as well to warn people against leaving any shelves in connexion with a fireplace which may catch and collect soot. In the plans of the houses in Mr. Bateman's illustrations we notice that in the majority of cases the kitchen window is so placed that it would be on the right hand of the cook when standing over the fire, whereas she wants it at her left; a point often overlooked both in large and small houses. We regret to see, in several of the upstairs plans, the water-closet and bath-room in one; it may be said that it is impossible to avoid it in a small house, but every effort should be made to cut off the water-closet from everything else; putting it in the bath-room is a barbarism which ought to be considered out of date altogether, in any house.

Some of the ideas about aspect expressed in the paper and in the discussion seem to us rather crude. Direct sunshine is not required on all the rooms equally. It is required on that which is the main sitting-room of the house, and if the house is so small that there is only one sitting-room besides the kitchen, then the sun should be on that; but wherever there are two sitting-rooms, one of which is the dining-room, it is better to have different aspects for them, the dining-room more away from the sun, or receiving it only in the early part of the day. The drawing-room may always be full south, if the site admits it, though a little westerly is better; but the dining-room should not be. With these few practical comments we must close what may be regarded as our contribution to the discussion of a very interesting subject.

THE NEW RAILWAY SERVANTS' ACCIDENTS BILL.

THE Report of the Royal Commission appointed to inquire into this subject revealed some startling statistics. They were compiled from Board of Trade Returns, and have therefore been available before this Report gave them such prominence; but the Returns had been judiciously dissected by the Commissioners, the result fully justifying their conclusions as to the perilous nature of certain railway operations.

For example, it is shown that out of the 23,964 goods-guards, brakesmen, and shunters employed in 1898, 1,327 were injured,—or one in every 18 men so employed. This is exclusive of 90 killed outright, and, moreover, relates only to casualties occasioned by accidents to trains or moving vehicles. This in itself tells strongly in favour of the Commissioners' suggestion that such an occupation should be regarded as a "dangerous trade or process." But they further go on to show, from corresponding Board of Trade Returns, that the work of those classes of railway servants to which reference has been made, is actually more dangerous than any of the "trades" already subject to State control, except Merchant Shipping.

Lord Stalbridge told the London and North-Western shareholders, when last year's abandoned Automatic Couplings Bill was introduced, that they did not want any more Government inspection forced upon them where it was not required; and that he believed that the Royal Commission would clearly show that more Government inspection would do harm instead of good. This forecast has certainly not been borne out. As the Commissioners observe, it seems difficult to suggest any objection to an inspection being made in order to *prevent* an accident occurring, seeing that it is accepted as right that an inspector should inquire into the circumstances and causes of accidents which do occur. These remarks were endorsed by the railway representatives on the Commission, and at the recent London and North-Western meeting Lord Stalbridge accepted the new position, expressing the willingness of the directors loyally to bow to any decision which was come to. Sir Ernest Paget, on behalf of the Midland, said that if Mr. Ritchie's Bill proceeded on the lines laid down by the Commission, they would not seriously complain; while Lord Claud Hamilton, for the Great Eastern, remarked that any improvement would be welcomed which would increase the safety of their servants.

The Bill now introduced by the President of the Board of Trade does proceed on the lines of the Report, but in a guarded manner, no reference being specifically made to several matters to which especial prominence was given by the Commissioners. For instance, there is not a word in the Bill on the subject of Automatic Couplings! Nor is there anything relating to solid or "dead" buffers, the evil effects of which the Commissioners commented upon, suggesting that after a certain period (ten years) no dead buffer wagons should be allowed to be used upon any railway. No rolling stock of this type has been built for some years, but there are a considerable number of such wagons still running, belonging to private owners.

But although these and other matters dealt with by the Commissioners are not directly referred to in the Bill, it contains certain comprehensive clauses which cover them all. The Board of Trade are empowered, in the first section, to make such rules as they think fit with respect to any of the subjects mentioned in the schedule to the Bill, "with the object of reducing or removing the dangers and risks incidental to railway service." The schedule relates to such matters as the provision of brake levers on both sides of wagons, labelling of wagons, towroping, protection of point-rods and signal wires, and the protection of men working on the permanent way—following precisely the lines of the Report with regard to these minor matters.

The remaining clauses of the section are, however, more comprehensive and far-reaching. "Where the Board of Trade consider that avoidable danger to persons employed on any railway arises from any operation of railway service (not being a matter in respect to which rules may be made under the foregoing provisions of the section), they may, subject to the provisions of this Act, after communicating with the railway company, and giving them a reasonable opportunity of reducing or removing the danger or risk, make rules for that purpose. The Board of Trade may, by any rules made under this section, require, among other matters, *the use or disuse of any plant or appliances*." It is noticeable that the initiative rests with the Board of Trade, and that, contrary to general anticipation, definite directions are confined to matters which have attracted far less attention than has been given to the subject of automatic couplings. It may also be noted that the Board have power to make an order or give a direction in lieu of a rule, if the requirements of the case would be better met in that way.

Many accidents to railway servants never appear in the Board of Trade Returns, owing to their occurring at private sidings. Under this Act, all such accidents must be reported, if the siding has a junction with the railway company's system. This will doubtless bring to light methods and practices against which a "rule" may advantageously be directed.

A subsequent section provides that it shall

be the duty of every railway company to give all reasonable facilities (subject to the due working of their traffic) for conducting any experiments made by the Board of Trade for the purposes of the Act. The Commissioners had pointed out that a dislocation of traffic would be a very grave calamity, and that full consideration must be given to the methods of effecting the objects in view, so as to produce as little inconvenience as possible to general trade. This is recognised in the Bill, the Railway and Canal Commissioners (to whom objections may be referred) being directed to have regard to the question whether the requirements of the proposed rules would materially interfere with the trade of the country, or with the necessary operations of any railway company.

The danger in view is clearly that of the inconvenience to trade which would arise from too hasty legislation with regard to such innovations as the adoption of automatic couplings. The Bill is stronger in some respects than that of last year, which met with so much opposition from the railway companies and truck owners; but as the Report of the Commission (on which every interest was represented) was unanimous, it is improbable that the Bill will meet with any very serious opposition, though it will doubtless be somewhat modified before becoming law. It cannot fail to give satisfaction to railway employés, although it has not quite taken the form they anticipated. What we have alluded to as "minor matters" are of considerable import to them, and Board of Trade rules with respect to them will be of great value.

The railway companies will probably reserve their resistance till confronted with proposed rules under the Act, for some of these will inevitably entail considerable outlay. They are already at enormous and increasing expense in providing for the safety of passengers. "King Fog," for instance, has figured in most of the half-yearly Reports as a factor accounting for diminished profits. A small line like the North London employed 186 men, and used 87,000 fog-signals in the course of a few weeks. At these times the work of shunters and others engaged in similar "dangerous processes" is doubly hazardous—unavoidably, to a great extent; but, in the language of the Commissioners, "when lives that could be saved are lost, and men injured unnecessarily, ought the State to remain quiescent, or leave it to chance or to the will of individuals to apply a remedy?"

NOTES.

"In or About" a Factory.

IT is unnecessary to repeat that the decisions of the Court of Appeal in the Workmen's Compensation Act have little value as precedents, since that statute will not allow of judgments which are based on principle. Last Saturday there was an interesting discussion in regard to the meaning to be attached to the phrase "about a factory." The Act allows compensation where a person is injured "in or about" a factory. In the present case a builder's workman was knocked over by a horse drawing a cart-load of materials on the road between one and two hundred yards from the factory. The County Court Judge held that he was injured when engaged "about a factory." The Court of Appeal decided that he did not come within this elastic phrase. It is obvious that each case must depend on its special circumstances, and, oddly enough, this legal statute has to be interpreted in a popular manner. By that we mean that the ordinary popular meaning of a word has to be considered. Lord Justice Collins gave as an example of "about" the instance of an injury outside a factory but within the outside fencing—that is to say, on the premises. No doubt ingenious minds can frame many examples, and it is easy to see how many hardships there must be in the interpretation of such elastic words. There can be no doubt that in the case under discussion the County Court Judge gave the workman the benefit of a too elastic interpretation of the section.

The late Mr. G. J. Symons.

WATERWORKS engineers have lost a valuable coadjutor in the death of Mr. G. J. Symons, F.R.S., which took place on Saturday last, the 10th inst. At an early period in his life he saw the importance of the distribution of rainfall from a water-supply point of view, and he was the first to collect systematic information on that subject. In 1860 he wrote the first annual volume on the "British Rainfall System," which work was for many years afterwards carried on under the auspices of the British Association. That volume contained records from 168 stations in England and Wales, but none from Scotland or Ireland. Through the energy of Mr. Symons, however, that small beginning has developed into an extensive organisation, the records now coming from nearly 3,500 stations in the United Kingdom and Ireland. As a result of his experience, he was frequently requisitioned as a witness at Parliamentary and other inquiries on questions relating to water supply. Nobody understood better than he did the use of the rain-gauge, as well as its shortcomings. The exceedingly local distribution of rain in many parts of the country was one of the many aspects of the subject to which he paid marked attention. In spite of all that has been done, however, in that direction, it is doubtful whether we possess more than a mere outline of the truth in regard to many important parts of the country. There is probably no portion of the United Kingdom of which an accurate knowledge of rainfall over many years is more desirable than central and south-central Wales. Yet we see that by 1898 Mr. Symons was not able to get records from more than 237 stations in Wales, whilst England furnished material for no fewer than 2,545 stations. The observers at nearly all these stations do their work gratuitously, and there being practically no funds available for erecting stations or for maintaining them, it has not always been possible to get information from just the precise spots desirable. This was, of course, no fault of Mr. Symons, and that he was enabled to enrol such an army of excellent observers under the circumstances is the greatest testimony that could be adduced, not only to his powers of organisation, but to his great love of the subject. The enormous mass of valuable information concerning rainfall which he gathered together during the past forty years will always remain as a monument to his untiring energy and perseverance.

Hampstead Heath Extension.

THE Report of the Executive Committee of the Hampstead Heath Extension scheme, which is to be presented to a meeting of the Committee and subscribers to be held on Wednesday next at the Vestry Hall, Haverstock Hill, is entirely concerned with the account of the negotiations and subscriptions which fortunately resulted in the purchase of the Golder's Hill Estate for the public. We presume, therefore, that the title, "Hampstead Heath Extension Scheme," really refers to this purchase; but there is a recommendation that the unapplied balance of 245*l.* 14s. 7d. should be invested in the names of the trustees and held on trust towards acquiring further desirable additions to Hampstead Heath as occasion may arise. We do not understand from the Report what is being done, or proposed to be done, with the house on the estate.

Hogarth's Calais Gate.

IT is stated that in pursuance of the dispositions of the late Duke of Westminster, Hogarth's painting becomes the property of the nation. The picture—which is known also as "Oh! the Roast Beef of Old England"*—was bought by Mr. Agnew for 2,450 guineas at Christie's Auction Rooms in May, 1891. Hogarth painted it after returning from his brief visit to Calais in 1748; whilst sketching the old gate he was arrested as a spy and committed to the custody of one Grandsire, in whose house he had taken lodgings, and whose name he inserted in the direction upon the joint of beef carried by the cook. The friar is a portrait of Pine, the engraver; the print, engraved by Hogarth and C. Mosley, is dated March 26, 1749. The stone gate, with its drawbridge, facing towards the sea, formed part of the wall of defence built in 1635, by Cardinal Richelieu, who also erected the old citadel. The greater portion, however, of the fortifications surrounding Calais were demolished about eighteen years ago for an extension of the town in the direction of St. Pierre.

The Society for the Encouragement of the Fine Arts.

MR. E. DORAN WEBB gave a lecture at the rooms of this Society on the 8th inst., entitled, "Salisbury Cathedral and How it Came to be Built." In a popular lecture on such a subject there was little likelihood of any new light on the incidents regarding the building or its history: probably no cathedral in Europe, certainly none in England, has such a clear record of its history as that of Salisbury. The removal of the cathedral from Old Sarum in the early years of the thirteenth century is attributed to a lack of water on that commanding site, but the choice of the present site is wrapt in legend: the abundance of water can however hardly justify the site; so recently as 1763 the service was stopped on account of the floods which were often six inches deep in the nave. The recurrence of such floods is unlikely since the town instituted a sufficient drainage scheme. All visitors to the cathedral must have had their attention called to the foundations which are above the ground level and take the form of a heavy plinth forming a stone seat all round the inside of the church. The marshiness of the land is one of the

* A copy of the print was engraved at the head of a cantata so entitled.

reasons for the insecurity of the spire, which is, moreover, built upon walls insufficient to carry such a towering mass of masonry. In remarking upon the recent work done in underpinning the tower, Mr. Doran Webb gave it as his opinion that within the lifetime of some present, another 20,000*l.* would have to be spent on similar operations.

Society of Painter-Etchers.

THE exhibition of the Society of Painter-Etchers and Engravings, at the Society of Water-Colours' rooms in Pall Mall East, is as usual a very varied and interesting one, and the proportion of work in the genuine free style of etching as contrasted with highly-finished works in the manner of engraving, is larger than usual. Among the special features of the exhibition is a small collection of etchings by Ostade. A new name we think in the exhibition is Mr. Edgar Chahine, whose "Le Chemineau" (1) is a study of a rustic wayfarer somewhat in the spirit of Millet; his other works, illustrating low types of French character, are rather vulgar. M. Helleu, who as usual is an exhibitor of dry-point sketches of ladies, is hardly at his best except in "Alice" (105) and "Mdlle. A. L." (110), in which latter, however, the black velvet collar or stock round the neck, while all the rest of the drawing is white and sketched in outline, produces rather an unhappy effect. Miss Gertrude Hayes is we believe a new comer, and her small study "Blowing the Fire" (8) is a real picture in etching. Among other works which show the genuine quality of etching—lines free and full of meaning—are the various works by Miss Mary A. Sloane; Mr. Oliver Hall's "Durham" (38); Mr. C. J. Watson's "York Minster" (68); Mr. Evershed's four Italian subjects (69 to 72); Mr. Holmes May's "Sketch in Surrey," and "Crowland" (42, 43), &c. Mr. Haig has several very fine architectural subjects, which, however, come rather more into the category of architectural drawings; the large one of "Notre Dame," for instance (23), gives the facts of the scene rather than the poetry. Mr. Bauerle's mythological fancies are good, especially "The Depths of the Sea" (14); and Mr. Joseph Knight gives two excellent examples of mezzotint (170, 171), an art so closely allied to etching that it may properly be classed with it.

CARPENTERS' HALL LECTURES:

MODERN HOSPITALS.*

THE subject selected for this evening is an extensive one, capable of being treated in a variety of ways and at considerable length; but the limited time at our disposal will only permit a general survey of the numerous classes of buildings employed for hospital purposes. Yet, in making that survey, it may be possible to direct your attention to the principles of design and construction which experience has so far indicated to be essential, and to note some details which have proved serviceable as well as to indicate the direction in which further improvements may reasonably be expected. My intention is first to read some general remarks and then, with the aid of a number of lantern slides, to present to you pictorial and verbal illustrations of various phases of our subject.

Several eminent authorities have written exhaustively upon the history of hospital design and development. To one of the most modern and comprehensive works, viz., that entitled "Hospitals and Asylums of the World," by Sir Henry C. Burdett, I am indebted for the facility of examination and comparison which are afforded by the large number of plans of hospital buildings therein set forth. The late Sir Douglas Galton's publication entitled "Healthy Hospitals," also contains much valuable and fairly up-to-date information in a condensed form.

Presuming you are all more or less acquainted with the literature upon the subject, we will proceed to inquire why it is that hospitals are a necessity, and what are the principles which should guide us in their design and construction. Primarily they are required because in many homes serious illness or accident cannot be properly attended or treated. Secondly, the larger of them form centres for medical, surgical, and nursing instruction. The art of medicine and the science of surgery, particularly the latter, have made great strides of advancement during the last half-century, and it is impossible to bring to the bedside of all who might benefit by them the various means and appliances which science and art have devised for the alleviation of suffering or the cure of disease.

Unfortunately it is the lot of many to have had experience of serious illness in their homes. Let us suppose such happens in a family consisting of several members. One of the loved ones being stricken down with disease or hurt, a room has to be set apart for the patient. Some one, maybe a paid nurse, has to be in attendance, for whom another room, as sleeping apartment, may have to be given up, while some one else watches by the bedside of the patient. These rooms must be periodically cleansed and dusted. Fires have to be kept up in cold weather. Additional work is thrown upon the kitchen, special foods and nourishment having frequently to be prepared and regularly supplied. The physician or surgeon, sometimes both or more than one of each, comes and goes, and may even at times have to remain in the house and be provided for; medicines and appliances have to be procured and administered; members of the family may have to relinquish their ordinary avocations or recreations so as not to disturb the patient; children must be kept quiet, and every one moves about the house as noiselessly as possible. Under such circumstances, is it a wonder that illnesses cause considerable inconvenience and often tax severely the capabilities of even the best-arranged houses of well-to-do people? How much more, then, is that likely to be the case in small and badly-arranged houses occupied by the families of the poor.

The foregoing words not only give reasons enough why hospitals are required but indicate the main principles which must guide us in designing a workable hospital. I say a "workable hospital" because it is essential to realise that a hospital is not merely a ward or even a series of wards for the reception of patients. The ideal of a perfect hospital would be a building or set of buildings in which a number of sufferers can collectively be attended and nursed with as much safety, ease, comfort, and convenience as a single patient could be in a detached house specially designed and constructed for his particular requirements regardless of expense.

What I have so far endeavoured to indicate is that sufferers from ill-health, accidents, or disease are, more or less, helpless individuals who require trained nursing under the watchful care of physicians or the skilled services of surgeons. Comfort and quiet have to be secured in the wards; their construction and fittings must be such that they may be maintained in a clean and healthy condition with the least possible labour and without inconvenience to the patients. Sanitary and ablutionary appliances must be near at hand, cautiously arranged and fitted so that neither nuisance nor danger to health can result from their proximity. A well and evenly-lighted room for surgical operations should be equipped with every useful appliance and instrument which skill has devised. Suitable day and night accommodation must be set apart for the medical and surgical staff—for the nurses, maidservants, and male attendants, and, in the larger institutions, for house governor, secretary, matron, and other officers necessary for the management. There must also be a dispensary and space for ambulance requirements. Kitchen accommodation and appliances must be adequate, with ample space for stores of all descriptions. A well-appointed laundry is required, and there should be a decent place for the reception of the dead, with post-mortem examination room adjoining. When a clinical school is attached to a hospital, further provision has to be made for lectures, post-mortem examinations, pathological and chemical research, also common rooms, cloak-rooms, and conveniences for the use of the teaching staff and students. Additional floor area is also required in the wards around the beds when the students are numerous. Connected with most large hospitals are out-patients' departments, which, although useful and necessary in populous localities, are not essential adjuncts.

With the exception of those which are provided and maintained by medical or surgical practitioners for their own use, hospitals are public institutions, erected and supported out of public moneys, by individual generosity, or by subscribed funds. In either case, they should be designed and constructed with a view to true economy—not only in the first outlay upon the site, buildings, and equipment, but also as regards the labour and expenditure daily incurred.

Externally, the buildings should certainly not be mean, much less repulsive, in appearance. If small, they may be homely in character; if large, they should be dignified in their architectural treatment; but, whatever style may be adopted, it should never be permitted to interfere with the convenience of plan or the appropriate requirements of the buildings. The architect must ever remember, and the builder, as well as every workman, should be made to realise that, apart from the knowledge and skill of the physician or surgeon, and the watchful care of the nurses, there is much in the design and construction of buildings intended for hospital purposes which may either add to, or detract from, the comfort and chance of recovery of patients, as well as either secure or impair the health and convenience of the staff. The physician, the surgeon, or the nurse who by ignorance or neglect jeopardises the life of a single patient is justly condemned; how much greater then is the responsibility of those who, having been entrusted with the design or construction of the buildings, may, through acts of commission or omission, endanger the health of many, or cause inconvenience and discomfort, so long as their work is permitted to exist! Some buildings have been badly designed, others improperly constructed, adapted, or added to. Others inadequately maintained or cleansed, and in others the sanitary appliances and drainage are defective. Such buildings are liable in the course of time to become infected to such an extent that patients would often recover more quickly or with greater certainty in an ordinary dwelling.

In view of these facts, and because our soldiers during the Crimean War, when wounded or stricken with disease, made better progress towards recovery in temporary huts and even in the open than when nursed in permanent buildings—most of such buildings, by the way, not having been designed or properly equipped for hospital purposes—a cry is raised from time to time that all hospitals should be temporary structures, which should frequently be destroyed and renewed. This, however, is an exaggerated idea, for there is no real reason why a properly-designed and suitably-constructed permanent building should not continue serviceable, if adequately maintained and periodically cleansed.

Temporary buildings, if frequently destroyed and replaced by new ones, are far too expensive; the best of them will not compare in comfort and convenience with those that are of more permanent construction, and, as a matter of fact, the so-called temporary buildings are too often permitted to exist and be used long after they ought to have been destroyed.

There are many occasions, no doubt, when temporary hospitals become a necessity to meet the requirements of epidemics or other emergencies; but the most reliable authorities rightly advocate that hospitals should generally be of a permanent character, carefully designed and constructed on the best known sanitary principles; it then rests with those who are responsible for their maintenance whether or no such buildings remain healthy and permanently suitable for hospital purposes, because it is a fact that, without constant care and attention to cleanliness, the bringing together under one roof of a number of persons in bad health is liable to contaminate the buildings with germs of disease, which may become a source of danger to the health of both patients

* A lecture delivered by Mr. William Henman, F.R.I.B.A., at Carpenters' Hall, London-wall, on March 8.

and staff; consequently, one of the problems which architects are expected to solve is, how best to design and construct buildings which, by ordinary means and reasonable care, may be proof against the lodgment of those injurious germs, or whatever it may be, which causes an unhealthy condition of the buildings.

Although during recent years science has done much to enlighten us with regard to the propagation of disease, still there is much that remains obscure; and, although architects can only be guided by what is definitely known or generally accepted as essential, they may, by personal observation and minute attention to details, apply such knowledge and experience with more or less advantage to the health and comfort of those who occupy the buildings with which they are entrusted.

The late Sir Douglas Galton in the concluding remarks to his generally excellent treatise, entitled "Healthy Hospitals," enumerates "Light," "Air," and "Warmth" as the three essentials of hospital design, but I venture to suggest that "Warmth" is not always required, and prefer to substitute for it as the third essential "Purity," for that is a constant necessity.

Having before me, while writing, the publication to which I have just referred, my eye was attracted by the last paragraph, which seems to me somewhat unjust to architects and uncalled for. It runs thus:—"It is hoped that by bringing together this information, the erection of large palatial hospitals in towns or other localities which are not suited to them will be discountenanced, and that the hospital architect, instead of seeking to erect a monument of his skill and taste in architectural design, will be content to provide simple structures abundantly supplied with light and air, in which the interests of the patients and their recovery will be not only the first but the only consideration." It sounds very plausible; but it is reasonable to ask why the skill of architects should be at all employed on such buildings if their art is to be ignored; for, as a matter of fact, it would be to the advantage of all if every one would remember that it does not follow that because a building is architecturally pleasing it is consequently more expensive or less appropriate for its intended purposes than is one devoid of architectural merit. It would not be difficult to point to hospital buildings in the design and construction of which neither cost nor trouble has been spared in the endeavour "to make them perfect in the interests of the patients and their recovery," the external appearance of which, to say the least, is unsightly, and yet, so far as I can learn, the patients progress no better therein than they might do in buildings less costly, but designed with some degree of architectural taste.

I shall presently show you a few views of hospital exteriors from different parts of the country, from which you may gather that by no means all the hospital authorities ignore architectural appropriateness. Among the views are a few of the General Hospital, Birmingham, completed in 1897 from my designs. Whatever opinions may be formed of its architectural treatment for a city hospital, built and supported by voluntary contributions, it is within my knowledge that, if the external design had been stripped of every architectural feature, the material employed being terra-cotta, no greater sum than from 5,000*l.* to 6,000*l.* could have been saved. Do you suppose that the citizens of Birmingham begrudge so comparatively small a sum out of a total of 210,000*l.*, which they have provided for the site, the buildings, and their equipment? Is there not even more than a probability that, out of the hundreds who will reside in those buildings, either as patients or those who minister to them, there may be many who will be cheered by the evidence constantly before them that, in addition to providing for their comfort and wants, thought and consideration have been bestowed upon the artistic design of the buildings in a manner to mark the nobleness of the work performed therein? At least, I know that the friends of the patients, the staff, and the general public are favourably impressed by the architectural character of the buildings, and that visitors to Birmingham of every grade are taken to view them among the sights of the city.

Apart from the broad treatment in architectural design of hospitals, there are minor matters of detail worthy of attention. For instance, sanitary conveniences are required throughout hospitals; therefore soil and waste pipes are a necessity, and have to be provided in numerous and frequently prominent positions. In some cases they are hidden away in such a manner as to be difficult of access for inspection or repair, but more frequently now-a-days it is the custom to exhibit on the exteriors of hospital buildings elaborate examples of the plumber's art; yet I venture to believe you would give preference, so far as appearance is concerned, to the inoffensive arrangement of such pipes at the General Hospital, Birmingham; and, judging from results, there is not the least reason to suppose that the unsightly exhibition of the bare bones of plumbing requisites are one whit more serviceable, and certainly no less costly nor more easily kept in suitable repair.

Other matters of detail, in which, by a little art, the common requisites of every-day hospital use might be made more sightly and even pleasing in appearance, could be enlarged upon, but we must return to general principles.

In order to secure the three essentials of "Light," "Air," and "Purity," it is necessary to have a suitable site, ample in extent. It should stand high and dry, with an inclination preferably towards the south, and the axis of all long wards should run as near north and south as the nature of the site and surroundings will permit, and be so arranged as not to overshadow one another. By these means good light may be secured, and although the chance of supplying fresh air from without is thereby facilitated, it is a difficult matter in our changeable climate to ensure an adequate and constant change of air within the buildings. For whatever construction may be employed as a protection from the outer elements, it must of necessity more or less impede the free movement of air which takes place in the open, and by which purification of the atmosphere is to a large extent brought about.

It is generally recognised that air soon becomes vitiated even in buildings continuously occupied by a number of people in reasonably good health, and unless frequent change of atmosphere is by some means brought about, an unhealthy condition results. In hospitals it is of still greater importance to have a constantly changing atmosphere, because contamination of the air more readily takes place around those suffering from disease or hurt.

I may again revert to this all important subject of ventilation, but will pass on now to the third essential, "Purity," without the two former, "Light" and "Air." "Purity," or, in other words, cleanliness and freedom from defilement, can scarcely be attained. In the manner of building frequently adopted, although wards, rooms, and corridors about a hospital may be well lighted, and provision be made for continuous change of atmosphere within, there are plenty of cavities and void spaces where impurity may lurk and be little suspected. Consequently, the air supply to such buildings becomes contaminated. Although it is advisable to avoid all inaccessible places where impurities may accumulate, I must warn you against an error into which some have fallen by supposing that all walls, floors, and ceilings should be of hard and impervious materials. If so constructed, rooms or wards are far from being pleasant places of abode. It is more difficult properly to temper and ventilate them, condensation takes place upon the more exposed surfaces in cold weather, sounds reverberate in a distressing manner, and, being unyielding in their nature, such materials are liable to crack, and are then difficult to repair or make good. Some suppose such buildings to be fire-resisting in the highest degree, but experiments demonstrate that materials more pervious have greater fire-resisting qualities. Although advocated by many authorities, it is to my mind questionable whether it is advisable to coat all walls and ceilings with a non-pervious material in buildings where natural means or exhaust methods of ventilation are depended upon. Doubtless the lower portions of walls, where they are liable to become dirtied or splashed, should be coated with a washable material and be frequently wiped over. The floors also should be of non-porous material. Teak or oak boarding, tongued and grooved, grounded with paraffin-wax and wax polished, makes a most comfortable, and at the same time a most efficient, flooring. It can be kept clean without having to be wetted, and is less hard, cold, and unyielding than marble terrazzo now frequently employed. That material, however, is perhaps the best available for corridors, operating, and such-like rooms; but when employed over large surfaces its unyielding nature causes irregular cracking, which cannot be satisfactorily repaired.

Following in importance the three essentials of "light," "air," and "purity" come suitable temperature, cheerfulness, and quiet, all of which may be secured by care in design and construction.

Other requirements are perfect sanitary and ablutionary appliances, ample and well-distributed hot and cold water supplies, also good artificial lighting (the electric light being preferred because it does not contaminate the atmosphere). Provision must be made for cooking suitable food for both patients and staff; apparatus for washing and laundry purposes are necessary; also means for distributing meals and other requisites, including lifts when buildings are of two or more stories.

It being conceded that hospitals are a necessity of the times, naturally some kind of classification must be adopted. First, as regards individuals, they will be divided — men, women, and children. Then as regards their complaints, when the numbers to be accommodated under one roof suffice, broadly into medical and surgical, which may be subdivided into non-infectious, contagious, and infectious, serious accidents, burns, and minor hurts.

Locality will determine the number, size, and character of hospitals. For small towns and villages the cottage hospital will suffice; sparsely populated districts will combine to provide isolation hospitals for infectious diseases; but in larger towns a general hospital may be required, and in cities there may be more than one general hospital as well as hospitals for special purposes, such as orthopædic, ophthalmic, throat and ear, skin and urinary, lying-in, women and children, dental, &c. In addition, there may be small-pox and fever hospitals, hospitals for the treatment of paralysis, epileptics, cancer and consumption, also workhouse infirmaries and military hospitals. The following may also be classed among hospitals. Homes for incurables, convalescent homes, homes for inebriates, idiot and lunatic asylums, and prison infirmaries.

It would evidently be impossible on the present occasion to lay before you all the various differences and details necessary to be attended to in the design of these many classes of hospital; for not only will each require special treatment, but in each case the conditions of site, its surroundings, and the number to be accommodated will greatly influence the plan and style of the building—yet the general principles necessary to secure healthy hospitals and the reasonable comfort and convenience of both patients and staff are in all cases similar.

Mr. Henman, by means of a number of lantern slides then illustrated various points in connexion with hospital design and construction—by plans and views, and explained the details of various sanitary appliances manufactured by Messrs. Morrison & Ingram, of Manchester, which incorporate suggestions he has made with the intention of ensuring simplicity and cleanliness. Also, by means of plans of several recently-erected large hospitals, he demonstrated how the excessive length of corridor might be avoided by employing the "Plenum" system of ventilation, by an arrangement of plan such as that which he had devised for the Royal Victoria Hospital, Belfast, and pointed out how facility of administration was thereby secured, together with greater comfort to the patients and the convenience of the staff.

The proceedings terminated with a hearty vote of thanks being accorded to the lecturer, on the motion of the chairman, who briefly commented on some of Mr. Henman's remarks, which, he said, he could fully endorse from personal experience of hospital work extending over many years.

PROFESSIONAL ADVERTISING.—The question of professional advertising having been considered by the Council of the Royal Institute of British Architects, they particularly desire to direct the attention of members of the Institute to the following two resolutions passed at their meeting on March 5:—1. That it is not derogatory to the profession for an architect to sign his buildings in an unostentatious manner, similar to that adopted by painters and sculptors; 2. That it is undesirable for architects to place their names on boards or hoardings in front of buildings during course of c struction for purposes of self-advertisement.

THE ARCHITECTURAL ASSOCIATION.

THE usual fortnightly meeting of the Architectural Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, at No. 9, Conduit-street, Regent's-street, W., the President, Mr. G. H. Fellowes Prynne, occupying the chair.

The minutes of last meeting having been read and confirmed, the following gentlemen were elected members of the Association, viz., Messrs. R. E. Hemingway, J. A. Jones, A. G. R. Mackenzie, and F. Nicholls.

Mr. R. S. Balfour, Honorary Secretary, proposed a vote of thanks to Mr. W. E. Riley, Superintending Architect of the London County Council, for his hospitality on the occasion of the recent visit to the Millbank Estate buildings.* This having been agreed to,

The Chairman announced that the following classes were about to commence, viz., on March 14, "Colour Decoration," Mr. A. H. Hart, lecturer; March 21, "Quantity Surveying," Mr. H. J. Leaning, lecturer; and April 4, "Mensuration, Land Surveying, and Levelling," lecturer, Professor H. Adams. The Chairman added that he earnestly hoped that many students would join these valuable classes as soon as possible, so as to have the value of the full course.

It was also announced that at the meeting of the Discussion Section, on March 16, a paper would be read by Mr. W. E. Dobson on "The Church of S. Francis Assisi: a Study in Colour Decoration."

The Chairman announced that a special meeting of the Association would be held on March 23, at seven o'clock, before the general meeting, in order to put before the members some verbal alterations in the By-laws, and to add to the By-laws that gentlemen elected after January 1 in any session will only pay 10s. 6d. for the half-year's subscription.

Mr. C. E. Bateman then read the following paper on :—

Small Houses.

The subject of Small Houses that has been set for me to speak upon this evening, in order that I might draw your criticism and raise a discussion, is in one way perhaps the most difficult that could be given to me, because every one here is acquainted with the conditions, and, as English architects, you know all about domestic architecture. It is therefore with very great diffidence that I venture to submit my short and limited experiences for your consideration, but I do so in the hope that you will be so kind as to give expression to any exception which you may take to any of my remarks, so that the discussion may be of greater value than the paper, which I am sure will be the case.

My remarks are supposed to apply to houses between the limits of, say, 800*l.* and 2,500*l.*, which down in the country is the most usual class of residence we have to deal with.

The following is the accommodation of an actual example of the lower limit.

Lower limit.—Porch and lobby; two sitting-rooms, 17 ft. by 13 ft.; pantry; larder; wine cupboard; kitchen; scullery; coals; ashes; water-closet; five bedrooms of the following dimensions, viz., 13 ft. 6 in. by 13 ft. 6 in., 12 ft. by 13 ft., 13 ft. by 10 ft. 6 in., 13 ft. 6 in. by 9 ft. 3 in., and 12 ft. by 10 ft. 6 in.; a bath-room and a linen cupboard. Height of rooms: Ground-floor, 8 ft. 6 in.; first-floor, 8 ft. 6 in.; to wall plate, 4 ft. and 6 ft.

		s.	d.	£
Ground Floor area ...	944 at	15	10½	= 750
First " " ...	734			
Total	1,678 at	8	8½	= 747
Cube	26,901 at		6¾	= 756

Cost in 1892: £750 at 5½ per cent.	£39	7	6
Ground rent: 2d. a yard.....	5	10	0
	£44	17	6
Rent obtained.....	£45	0	0

Higher limit.—For the higher limit I also give from an actual example the following accommodation:—Entrance; cloak-recess; hall, 14 ft. by 14 ft.; drawing-room, 18 ft. by 14 ft., with bay and ingle, 4 ft. 6 in. by 8 ft.; dining-room, 21 ft. by 14 ft. 6 in., with service door; billiard-room, 22 ft. by 17 ft., with bay and recesses; lavatory; pantry, 14 ft. by 7 ft.; wine cupboard under stairs; servants' sitting-room, 14 ft. by 12 ft.; working kitchen, 14 ft. by 14 ft.; sink and copper in recess; back stairs; trade entrance; larder; servants' yard and covered way to coals, ashes, knives, boots, and water-closet. Bedrooms, as follows, one each over hall, dining-room, and drawing-room; two over billiard-room; dressing-room over entrance; two rooms over kitchens; box-room over larder; bath-room and water-closet; stables, two boxes; harness-room; washing-shed; carriage house; and loft.

Ground floor area:

		s.	d.	£
House.....	2,317			
Outbuildings	173			
Stables	836			
	3,326 ft. at	14	0	= 2,324
Upper floor	2,263			
Total...	5,589 " "	8	4	= 2,325

Cube:		£	
House.....	61,851 ft. at 7½d.	=	1,935
Outbuildings	2,249 " " 6d.	=	60
Stables	13,537 " " 6d.	=	336
			2,331

Total ... 77,637

Contract, 1898, £2,325.

Ground rent, at 2d. a yard, £50.

As a general rule, the smaller the house the better, and the more certain the interest on outlay. The character and surroundings of the land should govern the character of the house, and it requires restraint not to put too good a house on the land. It needs the genius of the speculating builder to secure more than 6 per cent. interest on the outlay, and even this it is difficult to obtain. The question of outlay must receive our consideration, because a man is ill-advised if he lives at a higher rental than a definite proportion of his income, which some put down at one-tenth. One also must take into consideration the change in fashion and depreciation upon a change of tenancy or ownership.

Economy of necessity is of the utmost importance, oftentimes with advantage, as more houses are spoilt by having too much money badly spent upon them than too little; but fortunately for us, a client does not always look to his house to be one of his most saleable investments, but nevertheless it should be one of his available assets.

Birmingham, like many large towns of recent growth, has little or no available land near its centre for residences, as it is more valuable for business purposes and workmen's dwellings; the distance, therefore, has to be bridged over by rail, tramway, or omnibus.

This may seem an unimportant matter, but when a man is engaged in some business which leaves him free for a couple of hours in the middle of the day, he often takes the opportunity of going home for luncheon; it is therefore of the first consequence that the house should be so disposed that the cooking and service arrangements may be such that he can return to his business in a fairly good temper after his midday meal. In Birmingham there is very little or no freehold land; it is practically all in estates which only grant leases. This, perhaps, militates in some degree against substantial construction, but, on the other hand, a certain control is exercised which tends to improve the class of building where a competent surveyor is in charge, to whom all plans have to be submitted for approval.

The effect of the leasehold system on building is a very vexed question, and scarcely comes within our province this evening, although it has a general bearing; as a client will generally build rather a stronger and better house upon freehold land.

Points which force themselves upon us when laying down a plan are the approach to the land, the aspect, the views obtainable, and the levels, the most important perhaps being the aspect. Every ray of sunshine should be made available. No house can be considered satisfactory which cannot warm itself, and its occupants, with the sun as it passes, or appears to pass, from east to west; and too much stress cannot be laid upon this fundamental and important consideration. It is easy enough to shut out too much sun in summer, but it is impossible to obtain the sunshine if the rooms are placed on the wrong side of the house. When advising upon the selection of a site, keep this well in mind; for should the sun, the views, and the fall in the land be all in one direction, half our troubles are at an end. The most difficult plan to arrange is where the approach, and the front door, of necessity come on the south-east, for the reason that the dining-room, being of course placed south-east (so as to have sunshine for breakfast and luncheon), the front door has to be planned southward or eastward of it. If eastward, the entrance has to be crossed by the service from the kitchen; and if southward, servants have a long distance to go round the dining-room to admit visitors.

I think you will agree with me that a western aspect is bad for a dining-room, because the evening meal for more than half the year is taken by lamplight, and no direct sunshine is upon the room for breakfast, and very little for luncheon.

While upon the question of approach, I should perhaps remind you that porches placed in an internal angle, with the doorway on the diagonal, should be avoided, as they are very difficult to drive up to. Porches are not easy to treat, as, when small and of the usual type, they seem to be stuck on, and to have the character of a dog kennel or of a furniture van. When large enough and two stories high, they certainly look better, but are expensive, and I am inclined to think the recessed porch is cheaper, while it gives scale to a small house and will form in the hall a convenient bay-window recess. The space over the top of the door may form a useful cupbord for rugs, tennis rackets, &c.

After having considered the possibilities of the site, with its aspects and approach, the next point will be to determine the number of stories required to contain the accommodation. In the country, basement kitchens are not advisable, as no servants can be kept where they are not on the level. In fact, avoid cellars as much as possible as they entail considerable outlay for a provision which is really but little used, while for the smaller class of house under consideration, sufficient space for wine or beer may generally be found under the staircase by going down three or four steps to the bottom of the footings.

Having disposed of the cellars the ground plan will now receive our attention, but we must not get too much wedded to a particular arrangement without carefully considering the bedroom floor and the roof plan. This latter is so all-important, not only from the nature of our climate, and on account of the capacity of the attics for containing bedrooms, but also from the effect it produces in external appearance, so that the roof in a great measure governs the plan itself, and unless it seems to ride comfortably on the walls, with its spans intersecting easily and simply into one another, the general harmony and homogeneous character of the whole block will be spoilt.

I have found a span of 17 ft. will give useful attics by placing the joists underneath the wall plate, and by carrying them through and spiking them to the feet of the rafters a good tie is obtained. Studd up to the rafters with the intersection 4 ft. from the floor, and place the purlins above the ceiling joists, but at their intersection with the rafters, and you will have a strong, rigid, and economical roof.

Trussed purlins are very useful, as forming the sides of the attics, and will often be found more convenient than principals, especially in wide spans, as the sill piece can be used as the bearer for the attic joists, and the wall plate be kept to 7 ft. from the first floor. I generally use 4½ in. by 3 in. rafters, placed 16 in. centre to centre, with 11 in. by 4 in. purlins, and plates 9 in. or 11 in. wide. This latter, I think, is a wise precaution, especially in 11-in. hollow walls, as support is thus obtained from the inner as well as the outer 4½ in. of the brickwork.

Boarding the roofs gives an additional strength, and, although it raises the cost, it makes the attics much warmer, and, if you have slept in attics all your life, as I have done, you will realise this advantage. If boarding cannot be adopted, Willesden paper is a useful substitute, and should be placed on the top of the rafters with an additional intermediate lath, the whole torched up solid as the tiles are put on, keeps the fine driving snow from getting in and also keeps out the draught.

As regards roof coverings, I suppose it will be agreed that stone slates from Northamptonshire and the Cotswold Hills are without doubt the best, not only from their strength and lasting qualities, but also for their appearance. They require to be carefully laid in the first instance, as they are not easily repaired, except by men from the district where they are obtained; in fact, men used to

* See our issue for March 3, page 213, for a brief account of the visit.

handle the Colleyweston slates cannot lay those from the Cotswolds, and *vice versâ*. The Colleyweston slates are pointed, and the Cotswolds are not. The cost comes out to about 20s. to 30s. a square more than tiles, which mounts up; but they are worth a sacrifice to obtain. An example may be seen on Mr. Peto's house in Harrington-gardens, and of course every one is familiar with them who knows Oxford. If stone ridges cannot be used buff-coloured tile ridges look the best. Tiles make a roof warmer than slates, and where sound old ones can be obtained they look all the better for being weathered. Most of our modern tiles will not change colour, or, if they do, go black all of a piece, which is as bad. The smooth surface, due to the machine pressing used in their manufacture, accounts somewhat for this; also they are very much thinner than the old ones, causing the roof lines to look hard. Half-round ridge tiles are preferable to those with ornamental tops.

Fortunately green slates are more easily obtainable than formerly, and the cost of those from Llandilo, in South Wales, is not so very great. I have tried the experiment of laying them in narrow courses, the long way of the slates going in the same direction as the laths; in this way they come more in the proportion of tiles with a pleasing effect. Never use a red ridge with green slates; a blue ridge makes a much softer finish against the sky. There has been of late years a crusade against slates, and the purple-coloured Bangors are certainly uncompromising with red bricks, but the blue-grey upon whitewashed brickwork or rough cast are not so objectionable. If hips are introduced, make the ends steeper by lengthening the ridge 3 or 4 ft., so as to correct the dropping effect of the hip line when seen on the diagonal. This necessitates altering the gauge of the laths, but it is not a difficult matter.

Before leaving the roofs a word might be said about lead, but owing to its cost, it must be used very sparingly. In a small cheap house parapets and lead gutters are out of the question, and one often has to use cement flashings to chimneys where tiles are employed for the roof covering. Cement, however, will not always adhere to the smooth pressed tiles, without they are chipped. As lead work is expensive one must not have too many dormers, and it is not easy to design a house without dormers or gutters; in fact, it is a difficult but a useful exercise. Besides being expensive, they are two of the points where snow and wet may most easily get in.

Zinc is a poor substitute for lead, and its life is very short, especially when exposed to the effects of an atmosphere containing chemical acids, though in the country, and if of strong gauge, it may be used with care.

Running the roofs over the walls of gables always seems the most practical and simple way of keeping the wall dry while it saves flashing, but there is a peculiar charm about coped gables, which mark the verticality of the gable in contrast to the horizontal line of the eaves. When a soft stone like Bath is used, the coping should be laid on a damp course of slates or asphalt, and run out instead of having kneelers, as the water running down is intercepted here, soaks through the stone, and appears in the room. When this method is adopted, a flat back section, about 4 in. thick with a good overhang, is the best.

Hard bricks on edge with a tile creasing will keep out the wet; in this case kneelers must be arranged, or else the bricks slip off unless clip irons are used, in which case they are apt to look as if they would tumble off.

It is a good plan to have the end rafter an inch deeper than the others; this raises the tiles and turns the water from the parapet.

As to the projection of eaves, unless the soffits are plastered they look thin if projecting more than 9 in. to the back of the spout. Gardeners do not like a large projection, as the wall creepers get little or no rain upon them. This goes to show that eaves keep the walls dry. When arranging the eaves and spouting, look out for opening casements; it is trying to find that the windows won't open more than 6 in. or 9 in. Half-round eaves-spouts are as good as any. There is a good deal of difference of opinion as to whether chimneys on inside or on the outside walls make the rooms the most warm. Those in favour of inside stacks say that all the heat is thus conserved, while others maintain that an outside wall is cold unless it has a chimney in it. A safe way is to put some inside and some out, this being the arrangement that looks the best; and it is advisable, for appearance, to have as few large and high chimneys as possible; the external facing is much increased by multiplying the stacks, and they always look shorter and smaller in the work than on the drawings. Chimneys should be looked upon as miniature towers, not stalks. The roof and chimney design, with the general grouping, will often make or mar a house.

The term bungalow has had a good run for some time, but it is misleading; a house with simply a large and spreading roof is not of necessity a bungalow, and I doubt if it is an economical treatment, while it savours somewhat of affectation.

There is not much to be learnt from old houses about the planning of the bedroom floor, as in these the majority of the rooms lead out of one another and there are no original sanitary arrangements. These are points which would be considered serious defects in a modern house. One can, however, learn a great deal from them in the treatment of their plaster ceilings, such as may be seen not only in the best bedrooms, but also in the attics. Chastleton, in Oxfordshire, and Daneway, in Gloucestershire, may be given as good examples. Iron casements are still expensive, and if many are inserted the price runs up. Two opening casements, and often only one, are quite sufficient in each window. Two hollows run round the edge of wooden casements will keep the wet from driving through in exposed situations. It is not often that one can avoid lath and plaster partitions, as the requisite number of bedrooms cannot be obtained in a two-story house by simply carrying up the walls. They are, however, a great nuisance, as they invariably show cracks from the shrinkage of the timber, more especially when carrying any portion of the roof. This has been recognised in one estate near Birmingham, the surveyor declining to pass plans where they are shown. If open ceilings are adopted for the ground-floor rooms, it is very difficult to introduce rolled iron joists to carry the walls. The use of expanded metal lathing would, I think, avoid some of the cracking, but the intersection of the partition with the wall is the point where the greatest difficulty occurs. A very workable size for a bedroom is 17 ft. by 13 ft., while 10 ft. wide is about the minimum for comfort.

As to internal plumbing, it is hopeless to say anything about sanitary fittings, as they are changing every day, but a combined iron bath and lavatory, known as the Brampton, is a useful arrangement. For water-closets, I prefer lead traps to the basins, as there is less fear of breakage at the joint with the soil pipe. In order to avoid flooding from the freezing of pipes, expose and fix all water pipes on wooden grounds on the top of the plaster. This keeps them clear of the brickwork, while a gas jet or lamp in the water-closet will keep the flushing-tank from freezing. Round circulating tanks seem to work the best and are the strongest. If these can be placed in a cupboard off the passage, instead of in the bathroom, the linen will not be affected by the steam from the bath, and can be got out when the bath is being used, while the passage may be to some extent warmed. It is, I presume, unnecessary to point out the great disadvantage of ever putting the bath-room and water-closet over a living-room, not only because of a possible collapse, but also because of the nuisance arising from the noise. Provision should be made for stopping the water supply with stop-taps; put one, say, near the scullery-sink, if that is where the main comes in, as then the scullery-tap will empty the pipes. A stop valve fixed just behind the ball valve will greatly facilitate inevitable repairs. A scouring joint to empty the kitchen back boiler in case of repairs must not be overlooked.

When arranging the staircase, remember that elderly people will have to use it. Upon the recommendation of the coroner, no staircase is passed in Birmingham without a hand or wall rail. It is also well to bear in mind that sometimes coffins have to be carried down the stairs, and that it is unseemly to have carpenters in the house at such times either to break up the stairs, or that the coffin may be let down through a window. The position of the staircase frequently dominates the arrangement of a plan, especially where there are attics. For this reason a T-shaped plan is often convenient, as the stairs will then land in the centre of the attics, avoiding passages, which are almost impossible to arrange, owing to the want of head room under the rafters, and particularly under the valleys. If stairs are carried up between walls, 3 ft. 9 in. is about a minimum width. These walls can be wrought and framed up with 7 in. by 2½ in. timbers, with plaster between, with a good effect. Thick cords run through ring brackets are more agreeable than wall rails. For open stairs and landings saw-cut balusters, or panels of ¾ in. square bars in patterns, are a pleasant change and inexpensive if not over elaborate. Many handrails are spoilt by being over moulded, which makes them uncomfortable to the touch. The nosing to the steps is best flat-rounded on the top side so as to avoid cutting the stair-carpet. Three-and-a-half in. or 4 in. square newels, carried up to the ceiling, help to support trimmers and beams, and appear to enclose the stairs and give you more for the money than turned oak newels. To place the staircase in the middle of the plan saves passages, as the bedrooms can be entered from all round the landing, but for light and ventilation a staircase against an outside wall is better; borrowed light through doors and screens is a poor substitute for direct window light. The starting of the stairs is often better out of sight of the front door, and if planned to lead out of a lobby instead of directly from the hall the latter can be made a more comfortable sitting-room. Owing to the number of doors in a hall there is of necessity a certain amount of draught. The sitting hall and ingle nook are often applied to houses which are really not big enough to receive them; hence they are terribly cramped, or else other points have been so sacrificed to obtain them, that the balance is on the wrong side.

A sitting-hall gives a certain spaciousness on entering, but is not much use unless it is, say, 12 ft. by 15 ft., with the staircase shut off from it. Ingle nooks want to be at least 4 ft. 6 in. deep from the face of the opening to the chimney breast, so as to admit of two persons sitting at the sides, and they should be 9 ft. or 10 ft. wide, to save scorching one's clothes. I am not certain if fixed seats are so good as saddle-back chairs. We have all, I suppose, met with the difficulty of getting dog grates to draw properly, and I shall be glad to hear if any one has found a remedy for their smoking. I think it is a good plan to narrow the opening to the flue from back to front, bringing it over and taking it back again higher up, the opening to the flue being 6 in. or 9 in. from back to front. Very sharp twists are bad, but gradual and easy bends are a help. Lining the flues with 10-in. pipes is a good practice, but expensive. I am inclined to think that the position of doors and windows, and the direction of the draughts, has a good deal to do with causing smoky chimneys. One may generally rely on most of the flues going badly for the first twelve months, until they get dry, when pots may be added as necessary, and it will be well to keep these of varying heights, as this sometimes prevents the smoke from one flue being drawn down an unused flue adjoining it. Nine-inch square flues are too small, as there must be taken into account the clogging of the soot, which hardens and will not brush out. I much prefer stone and marble chimney-pieces, because they come then into the contract, and are put in as the work goes up, avoiding the stock patterns which we are compelled so often to adopt. I think a red stone, if it is of a bright colour, looks best. A good builder will make the wood chimney-pieces as well as anybody else, and although it saves trouble to go to a specialist, the stock-pattern effect is nearly always obvious.

In arranging the lighting of the rooms allow for a discount for curtains and blinds. If mullion windows are adopted one light extra should be provided to meet this loss. In spacing out, 1 ft. 6 in. to 1 ft. 8 in. centre to centre works well for 4½ in. by 3 in. wood, and also for light stone, mullions, while 1 ft. 10 in. is the maximum for 10 in. by 5 in. moulded stone mullions; 6½ in. and 4½ in. is a good section for a square stone mullion. When Bath is used and carefully sawn it requires little labour upon it; at any rate, do not permit the drag tool or comb to be used. Heads and sills are best not less than three courses of bricks deep, except for very small windows. Avoid getting the jamb stones of only two dimensions where toothing into the brickwork; vary their length as much as possible to avoid a mechanical appearance.

Sash windows are perhaps the most draught-proof and water-tight, particularly as they are not usually filled with lead lights, but they

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govern to a large extent the character of the elevation and are not always admissible. It is also a question if the slight inlet of air through lead lights—that is, supposing them to be of good quality—is not an advantage in ventilation, especially where the rooms are low.

Thick leads and two, or at most three, panes of glass in the width of the light are better than many small squares. Put in plenty of saddle bars, as cleaning the windows cracks the joints and lets in the wet; ¼ in. bars are not seen. Bay windows to be any use want to be big enough. Two canted angles at the ends are better than only one, and a step up into the bay gives an elevation to the seat which is agreeable either when looking through the window, or back into the room.

Low wide windows perhaps light a room the most agreeably, and prevent the sun's rays from penetrating too far into the room in the summer when the sun is higher than in the winter.

In house work joinery is an important trade, but owing to the small stock of timber kept nowadays it is difficult to get it good. The mechanical processes of drying now in vogue are a poor exchange for the old time method, and for this reason large panels are best avoided. Except under special circumstances, pitch pine is liable to split, and if used is better unstained. Square-framed doors are really quite good enough. When the panels are thick, in order to prevent weakening the styles, have the edges of the panels double rebated. Owing to the smallness of our rooms it is a great advantage to arrange them so that they can be thrown together by using folding doors. If you set the hall in the middle and can throw the room into it on each side, you obtain quite a large and interesting room for special occasions. Sliding doors for this purpose are a nuisance, and folding them back like shutters is as good a way as any, but look out for the projection of mouldings, skirtings, and lock furniture, and use projecting butts. These doors want to be higher than the ordinary doors, which will do 6 ft. 6 in. or 6 ft. 3 in. by 3 ft. or 3 ft. 3 in. Ledged doors in two heights, or stable doors, are nice for the entrance, as the upper portion can remain open in warm weather, and the porch is a pleasant place to sit in. Ploughed and tongued floors are necessary on the ground floor for warmth. These, of course, must be ventilated underneath, and iron sliding gratings are best, because of being under control. Open timber ceilings look very nice, but they are dreadfully noisy; if you do use them, put two thicknesses of floor boards and two thicknesses of felt, with inch strips between to make a cavity. For a room 17 ft. by 13 ft., two beams, 9 in. by 7 in., laid flat, will be sufficient, with 5½ in. by 3 in. joists, also flat, stumped into the beams at 16 in. centres. If you lay the joists on the top of the beams and plaster the under side, put a small wood mould at the intersection of the plaster and the beam, to cover the subsequent crack which will arise from shrinkage.

A point that will come under your notice upon the building is the way in which a 4½ in. wall gets cut to pieces by the ends of the joists of the floors. This will lead to a settlement and possible collapse some day. A course of bricks laid on edge across the wall makes a corbel table and gets rid of the difficulty. Proper fittings in the pantry, larder, kitchen, and scullery add a good deal of comfort to a house. Pantry dressers are usually made 1 ft. 6 in. wide, with 2 ft. at the wash-up portion, and 2 ft. 10 in. high, with cupboards having two shelves below drawers, about 5 in. or 6 in. deep. The shelves over should run 7 in., 9 in., and 11 in. in width, spaced about 11 in. apart, the top shelf running all round over the top of the door and window. Glazed sliding doors in front of the shelves will keep the china and glass clean, especially that which is not in continual use, while brackets of angle iron to support the shelves will be found less clumsy than those of wood. They will, moreover, not be in the way when the china, &c., is moved along the shelf. To economise space the pantry may very well be a passage-room between kitchens and hall; in fact, if it is increased in size and has a fireplace, it becomes a servants' sitting-room.

Many people prefer the scullery to be the working kitchen, and the kitchen proper to become the servants' sitting-room. This is a useful arrangement in a small as well as in a larger house, as in the smaller the same room can be used for breakfast, an advantage where only one servant is kept, and the sitting-rooms are not dusted until later on in the morning. The rule that says a kitchen should be as big as the dining-room applies to the larger as well as to the smaller house, because the larger the dining-room the more people there may be to cook for. One cannot do very much in the way of those outside premises that we find so luxuriously provided for in old houses. Provision for coals, ashes, knives and boots, with perhaps a shed, is all we can expect, but even these should be in a separate yard, not approached by the tradesmen's entrance, and must be also cut off from the stable yard, where there is one.

Buff-coloured tiles, perhaps, look the cleanest for kitchen floors and larders, but are somewhat softer than the red. Ruabon wire-cut 6 in. by 3 in. tiles last and look well for entrance passages and floors of ingle nooks, but for the latter I prefer stone paving, the same raised up 3 in. or 4 in. above the floor of the room. In the Cotswolds the ordinary stone from the hard bed is used for paving, and is of a very pleasing colour. Wood-block floors are too expensive to use, except, perhaps, in a billiard-room, where the table obtains a good foundation from the concrete bed.

Panelling and fitments are almost out of the question for houses of this type, not to mention ornamental plastering. Necessities for comfort must not be sacrificed for them, as they can be inserted afterwards.

As to plastering, it is better to carry it round the jambs up to the windows, instead of using wood linings and mouldings, which only get covered up with curtains, but as such jambs are liable to injury from staybars, &c., they are better if finished in cement. No mouldings are required. Modelled plaster ought to be kept soft and somewhat indistinct, and quite different from carved stone or wood. For panelling, one must study the old examples to get into the way of treating it properly. Both for the small and large panel types, you will find how unnecessary it is to keep the panels exactly the same width, while a gradual and almost imperceptible diminishing in height is desirable as you rise up the wall in the small panel work.

As to decoration, I cannot say very much. Unless you are very fond of colour and know how to treat it, you will be landed in difficulties, while the selection of wall-papers for clients is conducive to more friction than anything else in connexion with the house. For my own part, I have come to thinking the whitewash brush a handy instrument, and that white paint is easily mixed.

Concerning the external appearance, here again we must turn to our grammar of old examples. It does not follow that because something looks well in an old building it will look well if introduced straight away into a new one. The glamour of age will be wanting, the scale will probably be different, and the surroundings of totally another character; but the close and measured study of old work is, without doubt, an essential part of our education, guiding our minds to value certain ranges of proportion, and teaching us the value of surface.

I suppose at one time or another every one does a half-timber house, and wishes they had not after a later inspection. There will be a day of reckoning hereafter when the dilapidations are taken on these dress-coats in deal boardings. It is a great thing in the exterior work to introduce as little as possible that will require to be renewed and regularly painted. Five pounds a year for the jobbing builder does not seem much, but represents interest on 100*l.*; this would probably pay the difference in cost of oak over deal, or go to cover a good deal of that care in workmanship that is so wanting at the present day. Houses built entirely of brick look better in the work than on the drawings, especially in a neighbourhood where good bricks are obtainable. If the bricks are bad, whitewash them, either with or without rough cast. This particular treatment is being taken up a good deal now, I suppose as a reaction from the scarlet fever we have been suffering from for some time. Rough cast certainly has a texture and surface more nearly approaching stonework than anything else, but unfortunately it has a habit of peeling off and wants doing well. I do not think it is possible to lay down any rules for the design of a satisfactory elevation. It is very much a question of the setting out, and of the proportion of the solids to the voids, an outcome of the surface and colour of the materials employed, the relationship and contrast of vertical and horizontal lines, and of the grouping of the blocks of the plan and their roofing. I think one may take it that the solids diminish and the voids increase in the work, and in the way of ornaments one need not put in what one can possibly leave out.

I am afraid you will think this is a very dry and uninteresting discourse on construction, but architecture is nothing but construction, with the addition of a refining and beautifying element, obtained by continued and enthusiastic study, developing a certain natural aptitude.

I hope you will therefore forgive me if I should seem to have said nothing very fresh or helpful about designing small houses, and I trust that you will not hesitate to criticise, and to fill up the gaps, that have unavoidably been left in so brief a treatment of so large a subject.

Mr. G. B. Carvill, Hon. Secretary, then read the following notes on the paper which had been contributed by Mr. E. Newton:—

"Mr. Bateman strikes a true note when insisting upon the recognition of the practical side of house building. The proper solution of these problems takes us a long way on the road to the production of a good house; but it is one note only. All these practical requirements may be satisfied, and yet the result may be an uninteresting building devoid of character and quality. Practical problems may be solved in many ways, all right in varying degrees, but to solve them completely I think two senses must be at work, one definite and teachable, the other the property of the individual. It is not enough to give a practical and obvious solution only. Every material we use in building has an expression proper to itself alone. It is not easy to define this, but we feel intuitively that stone and wood must be treated differently, one kind of stone differently from another. Lead, copper, iron, all have their fields and their limitations. Deal must be treated in one way, oak in another, and so on, all through the whole range of materials. The right selection and proper expressive use of materials play an important part in fixing the general character of the building, and influence that character very considerably. Then, besides all this sub-expression, the building must have a note of its own, grave, gay, dignified, homely, austere, whatever it is we are aiming to express. Locality often to some extent determines this character. The conditions may be unvaried. Three sitting-rooms, a hall, six or seven bedrooms, cupboards, conveniences of all sorts, sanitation, ventilation, all the things so wisely and rightly insisted upon; but if we take house building exclusively from the practical point of view we may get a "dwelling" but not a *home*. Half-timber has led us all astray at one time or another, but its inherent falseness for modern use is, fortunately, killing it. Solidity and plenty of wall space are always right; not only do we want substantial walls, but substantial doors and windows, and strong solid floors. Flimsiness in a house destroys the self-respect of its possessor, and in course of time would be an excuse for almost any crime he may commit. The simple roof is undoubtedly the form most suitable to our climate, and the most restful to the eye. Good tiles ought not to be difficult to get. Thick, strong, deep red, hand-made tiles, however, are scarcely to be found. Tile makers are too much in love with a thing like a piece of boiler plate painted pink. I believe that if architects were more persistent the demand would create the supply. As it is with tiles so it is with almost all other materials. The manufacturers' ideal is a hard, highly-finished article. Finish rightly applied has its own place, but its application should not be universal. In conclusion, I should like to say that what I have endeavoured to make clear is that a house that is the outcome of an honest attempt to grapple with all the practical difficulties is always respectable, and sometimes even interesting, and that the ideal house must have all these qualities, plus a flavour and distinction of its own. The draughtsman's house, like a piece of petrified sketch book, is a thing without soul or body, and is always ridiculous, uninteresting, and impossible."

The Chairman, in opening the discussion, said that Mr. Bateman was well known to many of them who took part in the annual excursion. Mr. Bateman assumed that they knew all about domestic work. Certainly after the paper, and a study of the useful prints supplied by the *Builder* illustrating the

paper, they knew much more about small artistic houses than they did before.

Mr. Arnold Mitchell, in proposing a vote of thanks to the lecturer, referred to the practical character of the paper, to really criticise which was difficult. Any remarks he had to make were supplemental to what the lecturer had said, and to some extent in the nature of questions, such as no doubt others desired to put. First, as to hollow walls. Mr. Bateman had insisted that his small houses must be economical in construction, and he proceeded to obtain economy by putting two 4½ in. walls side by side. That, he believed, was a rather common practice in the Midlands, but it was not so in London and the suburbs. There were certain disadvantages in hollow-walled houses. For instance, probably most houses which had been erected for ten years were troubled with mice. Mice were a constant trouble, and were often in the building as soon as the walls were built, and when once in it was a hard matter to get them out. Could Mr. Bateman tell them how to keep the mice out of hollow walls? Another objection was that sound travelled more easily from room to room, and a still further one that on a poor subsoil the wall might not be of sufficient strength. There was no reference in the paper to the use of steel. He felt that the abundant supply of steel, and its extraordinary cheapness at the present time, had placed in the hands of architects the means of getting solid and strong work which would be satisfactory in appearance, especially for bressumers, joists, and such like. What means were taken by Mr. Bateman to prevent smells from the kitchen going upstairs? There were several ways of attempting this, but perhaps the only satisfactory method was to keep the kitchen a one-story building, though, of course, the question of expense was a serious one. He thought it desirable, wherever it was possible, to use steel work, coke breeze, and wood blocks for the floors of rooms above the kitchen, for in ordinary floors the smell generally penetrated into the upper rooms. The room over the kitchen generally got very hot in the summer, which was another difficulty which his suggestion overcame. As to roof treatment, he supposed that in the largest of these houses there would not be more than four servants kept, and not one of them would be a man-servant. Consequently, when there was a fall of snow, lead gutters got full, and as you could not send a maid to clear them, such gutters were to be avoided. It was a very desirable thing to avoid slates in this class of house. Slates were more economical, but where there were attics, slates did not afford sufficient protection from either extreme heat or extreme cold, and Mr. Bateman, who had lived in an attic with a slate covering, must have found the place very unpleasant in mid-winter and at mid-summer. For attic rooms, therefore, he preferred tiles to slates. The greater thickness gave greater protection from extremes of temperature. As to stone slates, there was no doubt that the Colly-weston were the most pleasant and artistic, and he would like to know from those who had had experience in the use of this material if it really made a sound roof. His experience was that Colly-Weston slates did not make the best roof. In Yorkshire one had the chance of getting really sound stone roofs. Zinc had been referred to as a roofing material to be avoided. When one wanted a temporary roof it was a good material, but in addition to the question of chemical decomposition from the atmosphere, one must, especially in domestic buildings, not forget the cats. Cats on zinc soon destroy it. He was very much interested in the figures given by Mr. Bateman as to cost. Could any of them in London at the present time build a house at 6½d. or 7d. per foot? He wished they could; for one reason, because there might be more clients wanting to build. And yet, perhaps, Mr. Bateman was entitled to a certain amount of commiseration, for the London architect whose houses cost 10d. per foot received half as much again in fees as did architects in Birmingham and the Midlands at 6½d. or 7d. per foot. But could houses be built at the price, with building materials costing what they do now? It seemed impossible to do it at the figures quoted—impossible, even with 11 in. walls and slated roofs. Another point in regard to kitchens—was it not most desirable, even in the smallest houses, to have through ventilation? The most desirable thing was to have the kitchen projecting, with windows at either side. As to bedrooms, he thought it was most desirable to plan the bed when planning the room, for one did not want one's feet pointing to the window, and the studied relation of door, fire, window, and bed made all the difference in the comfort of the room. As to pipes being clear of the brickwork, he would make a little suggestion—viz., to confide to their client the fact that the pipes were to be exposed. All clients would not object; some would even welcome the arrangement; but the architect ran great risk of objection and consequent alterations and expense where he did not tell the client what he intended to do. As to a remedy for smoky dog-grates, there were several remedies suggested, but perhaps the most effectual was to bring the flue down with a hood. As to flues lined with pipes, he did not know what was the general experience, but he had found that the joints in the pipes forming such flues gave a slight lodgement for soot, but the pipes themselves gave none, owing to their smooth surface, the result being constant dropping of small bodies of soot into the fire. Mr. Bateman had said that large panels were to be avoided. No doubt that was so with deal, but with American whitewood they were perfectly safe. Sequoia wood was not so good, because it was very soft. As to checking sound travelling from room to room, a simple method was to place on the joists strips of felt; that did something to soften the sound. With regard to the heights of attics, surely 8 ft. was abundant height if half the area of the room had a flat ceiling, and he protested against the severity of the by-laws which in some districts compelled a height of 9 ft. over two-thirds the area of the room, involving needless outlay.

Mr. Beresford Pite, in seconding the vote of thanks, said he would like to ask Mr. Mitchell what the aspect of the kitchen was to be if windows were to be placed each side of it? By such an arrangement cold air would be let in on one side, and when it was not wanted, hot air on the other. There were a great many points arising out of the paper which could be touched on if there were time. For instance, in a country house with a sunny aspect, all day long wasps, flies, bluebottles, &c., had to be thought of. As to cost, he did not think that 7d. per foot was too little for such buildings out of London. The mouse difficulty was not a serious one, and in a little house he erected some time ago he put the floor solid on to the concrete, and there was no room for mice. As to noise penetrating floors, the noise came through the boards and a strip of felt, as suggested by Mr. Mitchell, would not keep it out. He had saved in the matter of stoves by building them, and not buying them ready-made.

Mr. Hampden W. Pratt said that Mr. Bateman had given them many excellent suggestions with regard to house building. Architects in London were not troubled with the hollow wall question, because the Building Act did not permit hollow walls unless the statutory wall required was built in addition, and that, of course, made the work very expensive, if not prohibitive. He thought it was absurd that hollow walls should not be permitted sometimes: it was useful to provide them as dry area walls. As to mice, they were not the only vermin to be dealt with, for there were blackbeetles; and as a precaution he always endeavoured to provide a solid floor, at any rate for the kitchen offices—a wood block floor, cement, or tiles. Of course, that did not get rid of such pests, for they would come into the house in firewood, &c., and would get into the cupboards, though with solid floors they could be kept from hiding out of sight. As to halls, he thought they should be shut off from the staircase. It might be very nice to see the staircase rising out of a corner of the hall, but if the hall were used as a sitting-room, it was a nuisance not to be able to shut off the staircase from it. Curtains did not do it sufficiently. The place was draughty, and another disadvantage was that unless there were a servants' staircase, the hall had to be crossed, and where it was used as a sitting-room that was not pleasing. As to basements, he thought they were things of the past. Servants could not be got, nor could they be kept, where there were basements; though, at the same time, a dry house could be got where there was a good cellar underneath.

Mr. C. H. Brodie said he joined issue with the lecturer on the question of the 9 in. by 9 in. flue. He (the speaker) thought it was quite sufficient, and he knew a good many people who agreed with him. He had been informed that at the Millbank model dwellings the flues were 9 in. by 9 in., and this was also the case at the Boundary-street dwellings. Mr. Pite was not the first architect who had built his fireplaces instead of buying them. That had been done at both Millbank and Boundary-street, except for the kitchens, where ranges were put in.

Mr. A. S. Tayler said as to the lecturer's remarks about the chimneys of houses built in the spring not smoking because the brickwork had time to dry, he thought it was rather because of the drying of the joiner's work which produced cracks, and supplied the fireplace with air. As to Mr. Brodie's remarks about flues, it must not be forgotten that the products of combustion from the kitchen flue of a house of some size, and those from a small dwelling, were very different in quantity.

Mr. A. T. Bolton said he understood that the flues of the dwellings at Boundary-street and Millbank had had to be small because of the number of rooms, and so as not to diminish the available accommodation by making the stacks larger than possible. Mr. Bateman's experience and his belief in a 9 in. by 14 in. flue was rather important, and the question could not, he thought, be so easily settled as Mr. Brodie suggested. He would like to remind them that Mr. Bateman was a prize-man of the old A. A. class of design, and that his work in regard to small houses had been of gradual growth. Mr. Bateman had himself admitted that some of his early houses he did not altogether care about. He (the speaker) had from time to time seen Mr. Bateman's work at Birmingham, and he thought it showed something that was not to be found in London, viz., houses built on strictly commercial principles, bringing in a good return on the outlay, and at the same time having an artistic character which we were not exactly accustomed to up here. Young architects appeared not to care for this class of work, perhaps from the idea that they had been trained for something better; whereas they should seriously take up the work which came to their hands, and see what could be made of it. This was better than preparing ambitious competition drawings which would come to nothing. By taking the daily work which came to him, and by doing it thoroughly, a man was rewarded by a wonderful increase in power and found himself, after a time, doing his work in a style which he might not have thought himself equal to doing when he started his career. Mr. Bateman himself would very likely dwell on the benefits to be derived from taking part in the Architectural Association excursions. Their lecturer had an extraordinary collection of sketches done on these excursions, and, in addition to that, there were very few men who had a better knowledge of modern work of the best architects, which he indefatigably hunted up.

Mr. L. C. Riddett said he had formed an opinion a long time ago that a man could not properly plan a house unless he had the responsibility of living in it. He would like to ask Mr. Bateman if he found 750*l.* sufficient for this sort of house, and if he had been able to insure the 5½ per cent. that he spoke about. No doubt the smell from the kitchen was the *bête noire* of the small house. The question of elevation was almost like a theological question, for one could not discuss design. He once had the privilege of speaking to Mr. Nesfield, one of the first designers of the century, on the subject, and asked him where he got his motive for his Queen Anne buildings. The reply was "From the Sussex Farmhouses." Many people would be astonished at the extreme simplicity of those farmhouse buildings. Mr. Nesfield's designs were very simple in character, and they were not overdone with half timber—one of the greatest shams we had. He did not think that architects in London had quite realised what it was to contend with the elements in house building. If they had to build on the top of a hill in Sussex they would realise what driving rain and snow will do.

Mr. W. E. Hewitt said the position of the water-closet on the ground floor was an important point. It seemed best to put it off the garden entrance, guarded by a hat and cloak lobby. As to blackbeetles and such pests, he had found it satisfactory to use tiled skirtings in kitchens and sculleries. This was an inexpensive method of keeping down beetles, while the tiles could easily be washed. He did not know if anybody had found a perfect slop-sink; if so, he should be glad to hear of it. A good plan was to project rain-water

pipes slightly from the wall, so as to prevent the brickwork being spoiled by dirty water running from the pipe if a leakage occurs. It was an important thing to provide a garden entrance, though it was often difficult to do so, and added a good deal to the cost unless it could be arranged under the staircase. He also condemned the fussy effect brought about by a patch of bastard half timber work being used here, and a patch of rough cast or tile hanging there, instead of deciding upon one or the other (not the first, if it could possibly be avoided) and making it continuous round the four walls of the building.

Mr. H. J. Leaning said that he could corroborate what Mr. Bateman and Mr. Pite had said as to the possibility of building small houses as cheaply as 7d. per foot cube, for quite recently several had come within his experience in the home counties which cost from 6½d. to 7½d. per foot. For a country gentleman's house he thought 8d. was the minimum price that should be allowed, though many had been done for that.

Mr. E. Greenop said that the 760*l.* house that Mr. Bateman had referred to would in London cost about 900*l.* There was not the slightest chance of competing with speculative builders in London, because the 750*l.* house which Mr. Bateman had referred to, if built by the speculative builder, with the same number of rooms, possibly larger, could be bought for 450*l.* As to the 9 in. by 9 in. flue he never used a larger size except for the kitchen, and he thought 9 in. by 9 in. was ample.

The Chairman, in putting the vote of thanks, said Mr. Bateman had shown them that an artistic house could be built at a comparatively cheap rate, and he had done a service in bringing the subject before them. He was glad to hear that such houses could be built for the price mentioned by Mr. Bateman, but he was afraid that those prices could not apply to London; presumably labour and materials were cheaper in Birmingham. He was glad that Mr. Bateman had mentioned the extreme importance of aspect and prospect; one could scarcely get too much sun in this damp and dull climate. Mr. Pratt's remarks about screening the staircase from the hall reminded him of Mr. Aston Webb's remarks last session, before the School of Design, on planning.* As Mr. Webb said, there was no need why attention should be drawn to the staircase unless it led to some important feature in the house, but as in the ordinary dwelling house the staircase led only to the bedrooms, there was no necessity for making it a central feature. As to the use of steel, he felt it might be usefully employed in some cases where wood had previously been used. As regards the flue, the question was continually cropping up. Of course, with a flue-pipe a smaller flue could be used than with an ordinary brick flue. He was not sure that 9 in. by 9 in. was a good size (Mr. Brodie: I am responsible for some thousands of them). And they work well? (Mr. Brodie: Yes, and do not smoke). He was glad to hear it, but as a rule he should prefer to put flues of larger size. As to smoky flues, in one of Mr. Ernest George's houses the flue was so constructed that it caught the soot, which fell on a little ledge just above the fire, and the flames lapped round and burnt it. As to Mr. Pratt's remarks about cellars keeping a house dry, he was not so sure of that unless they had cellars all over. Cellars were too often places for the accumulation of wet and damp, so much wall space being exposed to the damp earth.

The vote of thanks having been put and very heartily agreed to,

Mr. Bateman, in reply, thought 9 in. by 14 in. was the best size for flues. In certain circumstances—for boilers or coppers—he had used 9 in. by 9 in. flues, for the draught was stronger and the soot was burnt, but he believed that after some years the accumulation of soot was so great that the area of the flue was decreased. As to cellars, he would at least avoid putting them in damp situations, for in wet soils the moisture worked down the brickwork and made the place damp. He was glad to hear the remarks about Mr. Nesfield, for whose work he had a great admiration. It was work that one might admire conscientiously, and be enthusiastic about.

The Chairman said that the next meeting would be held on the 23rd inst., when Mr. H. C. Corlette would read a paper on "The Decoration of Churches."

The meeting then terminated.

* See our issue for October 15 1898.

THE ARCHITECTURAL ASSOCIATION:

VISIT TO MESSRS. FARMER & BRINDLEY'S WORKSHOPS.

THE third spring visit of the session took place on March 10 to Messrs. Farmer & Brindley's workshops. The visit was indirectly the outcome of an invitation conveyed to the members by Mr. Brindley when he read his paper before them early in the session.

The collections of marbles, carvings in wood and stone, of all descriptions and periods, to be seen in Westminster Bridge-road, constitute in themselves an extensive architectural museum of no mean order. Attention was mainly given to the treatment and methods of obtaining marbles. It is due to Mr. Brindley's exhaustive researches in Southern Europe and Egypt that many of the best specimens were obtained. In showing the visitors round he gave interesting descriptions of the difficulties in finding the actual quarries, some of which were known to exist in the time of the ancients. It is impossible to enumerate all the beautiful marbles that were seen, but a slab of red porphyry worked as a table top deserves special note.

In the workshops all sorts and conditions of shaping, moulding, and polishing marble by machinery were demonstrated. Modern machinery has reduced the cutting of the harder marbles to a reasonable limit, but when we are told that a circular steam diamond saw takes four or five days' constant working to cut through a very small piece of porphyry, we cannot but think, judging from the specimens extant, that mechanical contrivances were better known to the ancients than is generally supposed.

Carvings and marble work generally, and for various public buildings, were to be seen under varying conditions of completeness, and considerable interest was taken in several magnificent monolith columns in Verdi Antique, undergoing courses of turning and polishing in readiness for their final home at Mr. Bentley's Westminster Cathedral. Among other works could be noted an altar for St. John's, Cambridge, by Mr. Garner, and the frieze for the Prudential Offices extension by Mr. Waterhouse. A decorative series of oak panels for the Drapers' Hall, and a large bell-wheel, both by Mr. T. G. Jackson, were also of considerable interest.

The thanks of the Association were conveyed to Mr. Brindley by the President.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the subscribers and donors of this Society was held in the rooms of the Royal Institute of British Architects, No. 9, Conduit-street, W., on Wednesday afternoon, Mr. J. Macvicar Anderson presiding, in the unavoidable absence of the President, Mr. William Emerson. There was a numerous attendance, including Dr. Phené, Mr. Sydney Smirke, Mr. Arthur Cates, Mr. H. L. Florence, Mr. E. B. l'Anson, Mr. J. T. Christopher, Mr. W. Woodward, Mr. W. Grellier, Mr. C. Evans-Vaughan, Mr. Lewis Solomon, Mr. T. M. Rickman (President of the Surveyors' Institution), Mr. W. Hilton Nash, Hon. Treasurer, and Mr. Percivall Currey, Hon. Sec.

The minutes of the last meeting having been read and confirmed, the following Report was read and adopted:—

"In presenting their fiftieth annual Report, the Council of the Architects' Benevolent Society have the pleasure to congratulate members of the Society on the attainment of its jubilee, as it was founded in 1850. From small beginnings the Society has steadily developed to its present size and efficiency; during its existence many thousands of pounds have been collected and distributed amongst deserving applicants. Through the agency of the Society distress has been alleviated, domestic calamities averted, temporary difficulties, due to ill-health or other causes, overcome, and old age relieved of the burden of poverty. It has taken a place amongst philanthropic institutions, and provided for the architectural profession an opportunity for benevolent effort on behalf of its indigent members, which could not have been so effectively provided by other means. It is a matter of regret that this opportunity has not been more generally appreciated than has been the case hitherto. The desire, expressed at the first annual meeting of the Society and repeated frequently since, that every architect in active practice should become a contributor, is still very far from realisation.

The proposal to celebrate the fiftieth anniversary by a festival dinner, announced in the last issue of the Red Book, has been duly considered during the year: but, owing to the many calls upon private means in consequence of the war in South Africa, it was decided to postpone the celebration to a more convenient opportunity.

The amount received in subscriptions during the year on which your Council have to report was 469*l.* 3*s.*, which shows a small diminution on the amount received the year before. Eleven members failed to pay their current subscriptions, four withdrew from the Society, while ten new members have joined the list of subscribers.

The Council have gratefully to acknowledge the receipt of the following donations:—Mr. J. Macvicar Anderson, 18*l.* 10*s.*; Colonel R. W. Edis, 10*l.* 10*s.*; Mr. F. Wallen, 5*l.* 5*s.*; Mr. G. Inskipp, 5*l.* 5*s.*; Mr. J. T. Christopher, 5*l.* 5*s.*; Mr. E. Tewson (per Mr. Roumieu), 5*l.* 5*s.*; Mr. Wm. Emerson 5*l.*; Mr. J. M. Brydon, 5*l.*; and many smaller amounts.

It is with great regret that the Council have to record the death of two of the most distinguished members of the Society, the Duke of Westminster and Sir Arthur W. Blomfield, both generous subscribers. Sir Arthur Blomfield was a member of the Council at the time of his decease.

Six meetings of the Council have been held during the year, the average attendance at each meeting being eight.

The sum of 145*l.* has been paid to the Society's six pensioners, and 552*l.* 4*s.* distributed amongst forty applicants for relief.

During the year, two of the pensions becoming vacant through death, the places were filled by eligible candidates.

The following gentlemen, being the five senior members, retire by rotation from the Council:—Mr. H. L. Florence, Mr. J. T. Christopher, Mr. Sydney Smirke, Mr. W. Grellier, and Mr. E. W. Mountford. Further vacancies have occurred through the resignation of Colonel Edis and the death of Sir Arthur Blomfield. To fill these vacancies the Council have the pleasure to nominate Mr. Arthur Cates, Mr. E. A. Gruning, Mr. G. T. Hine, Mr. H. C. Boyes, Mr. Zeph. King, Mr. G. Inskipp, and Mr. J. T. Wimperis.

The balance-sheet and income account for the year ended December 31, 1899, audited by Mr. Henry Dawson and Mr. Zeph. King, are submitted below.

The Council wish to express the indebtedness of the Society to the Royal Institute of British Architects for office and other accommodation, and to the secretary (Mr. Locke) and to his assistants for their helpfulness and courtesy in any matter connected with the Society."

In moving the adoption of the Report, the Chairman made a strong appeal to members of the architectural profession on behalf of the Society, asking particularly for subscriptions.

Mr. Cates, in a lengthy speech, brought forward statistics to show how poorly the Society was supported by the general body of practising architects.

On the motion of Mr. Woodward, seconded by Mr. Evans-Vaughan, it was agreed that the statistics compiled by Mr. Cates should be issued to members of the Society and other architects.

A vote of thanks having been passed to the retiring members of the Council, it was agreed that the Council for the year of office 1900-01 be elected as follows:—President, the President of the Royal Institute of British Architects; Mr. R. St. A. Roumieu, Mr. W. Woodward, Mr. E. B. l'Anson, Mr. E. H. Martineau, Mr. E. T. Hall, Mr. T. M. Rickman, Mr. R. A. Briggs, Mr. Arthur Cates, Mr. E. A. Gruning, Mr. G. T. Hine, Mr. Zeph King, Mr. H. C. Boyes, Mr. G. Inskipp, and Mr. J. T. Wimperis.

A cordial vote of thanks was passed to Mr. W. Hilton Nash and Mr. Percevall Currey for their services respectively as hon. treasurer and hon. secretary, and both gentlemen were re-elected for the ensuing year of office.

On the motion of Mr. Rickman, seconded by Mr. Nash, a vote of thanks was passed to the retiring auditors, Mr. Henry Dawson and Mr. Zeph. King.

Mr. J. T. Christopher and Mr. Percy Hunter were elected auditors for the ensuing year.

A vote of thanks to the Royal Institute of British Architects for office accommodation and to the chairman terminated the proceedings.

HAMMERSMITH VESTRY.—At the meeting of the Hammersmith Vestry, on Wednesday, tenders as under were accepted:—Lime and cement, Messrs. J. Williams & Co., at schedule prices; drain pipes, Messrs. J. Wiggins & Co., at schedule prices; Guernsey granite, Messrs. J. Mowlem & Co., 13*s.* 9*d.* per yd.; Alderney granite, Mr. L. Somerfield, 13*s.* 6*d.* per yd.; Queenast granite, Mr. C. Manuelle, 10*s.* 9*d.* per yd.; Enderby granite, Messrs. B. Nowell & Co., 12*s.* 5*d.* per yd., delivered at railway station, and 14*s.* 5*d.* per yd. delivered on roads; flints and hoggin, Messrs. Eastwood & Co. 4*s.* 6*d.* per yd.

Home for Discharged Soldiers, Bisley.
The Recreation Block.

THE BUILDING TRADES' GIFT TO THE NATION:

HOMES FOR DISCHARGED SOLDIERS AT BISLEY.

WE presented the plans and elevations of a pair of the homes to be erected at Bisley some weeks back,* and we now give a plan and elevation of the recreation house which is to be erected in connexion with these homes under the same scheme. There will be three pairs of homes in all, each pair of homes, as will have been seen, having a mutual service block. The homes will be grouped in a semi-circle, and the central feature will be the recreation house now shown. The various homes will be connected by covered ways, not only among themselves, but with the recreation house, so that the homes, service blocks, with recreation house, may be considered as a single unit for administrative purposes.

Each home will afford accommodation for sixteen discharged soldiers, and these will have a general living room, measuring 23 ft. by 29 ft., a dining-room 28 ft. by 14 ft., and a large service room in which the men will also keep their lockers. Ten of the inmates will have their own bedrooms, but six will have a general dormitory, and this is being particularly arranged to meet the wishes of the old soldiers who, in many instances, having been used to barrack dormitories, do not care for single rooms.

The service block, placed centrally between each pair of homes, is hence planned to fulfil the requirements of thirty-two men. It will contain a large kitchen, with scullery, a matron's living room, and a matron's bedroom, a nurse's living room and a nurse's bedroom, and the accommodation for a cook, kitchenmaid, and two cleaners. The service block in each case has a cellar from which the central heating arrangement for each pair of homes is worked.

The recreation house is intended to provide, firstly, a general hall for the inmates of all the homes, in which they can meet at entertainments and the like; and with this view a small platform or stage has also been provided, whilst the size of the hall will allow for the inmates of the adjoining homes (the Princess Christian's Convalescent Homes) to participate in the benefits of the Builders' Gift. The recreation house, however, also contains a couple of workshops, in which the old soldiers can do wood-carving and the like, a class-room for Bible classes, and the Commandant's office. Under the same roof will also be found the Commandant's residence, which takes the form of a small house with two reception-rooms, four bedrooms, and the necessary offices.

The design for the building has to a certain extent been governed by the nature of the scheme; thus it was thought advisable to have a mansard roof, by which means the timber trades would have an opportunity of sharing with the brick trades the heavy constructional work of the buildings. Slating again, is used as a roof covering, so as to give the slate quarries an opportunity to help, whilst the tiling trade had an opportunity of assisting in tiling the corridors, verandahs, covered ways, &c., which again are roofed on the flat so as to give the zinc-workers and lead-workers an opportunity to help. The plinths will be of blue brick, in which the Staffordshire brickmakers can participate. Most of the windows have iron casements, so that the iron casement trade can help; and, in fact, the question of assistance has always been borne in mind.

Mr. Edwin O. Sachs has acted as honorary architect, but he wishes it to be particularly known that he has had much useful advice on the plans from his fellow-members on the executives—Messrs. Farrow, Hammond, and Marsland—whilst Mr. Rider, the honorary secretary, and past President of the National Association of Builders, has materially helped him in the allocation of the materials presented.

The value of the buildings, according to usual contract prices, may be taken at about 25,000*l.*

In addition to the actual buildings, there will be the gift of the electrical installation by the electrical trade, and the equipment of the laundry by the laundry trade, all under the same scheme.

* February 10.

We are asked to announce the following further list of contributions and subscriptions:—

Additional Contributions for Individual Sections of the Work.

Messrs. J. Stiff & Sons.—Terra cotta copings, sills, and air bricks for one home.
Mr. Thomas Beck (Derbyshire).—The stone sills for one home.
Mr. Walter T. Chapman (Cleethorpes, Grimsby).—The terra cotta sills for a service block.
Mr. Charles Burley (Sittingbourne).—Fifty tons cement.
Messrs. Frederick Walton & Co.—Dadoes of Lincrusta Walton throughout the halls, staircases, and landings of the homes.
The Wall Paper Manufacturing Company.—Dadoes of Anaglypta throughout the living rooms, corridors, and lavatories of the homes.
Messrs. Sissons, Brothers, & Co. (Hull)—The whole of the distemper.
Messrs. Starkie Gardner & Co.—Art metal work to the value of 50*l.*
The St. Pancras Iron Company.—Two iron staircases.
Messrs. Richmond & Co. (per Mr. W. Sapcote).—Six gas cooking stoves.
Messrs. T. & R. Boote.—100 yds. flooring tiles.
Messrs. Farmer & Brindley.—20 yds. super marble paving.
The National Opalite Glazed Brick and Tile Syndicate, Limited (per Mr. W. Griffiths).—500 ft. super white opalite tiling.
The Meadow Foundry Company (Mansfield).—Four manhole covers and frames.
Mr. Samuel Wright (Hackney).—Fibrous cornices to the value of 10*l.*
Messrs. George Caston & Co.—Wrought iron grilles and fancy work.
Messrs. Nash & Hull.—Wrought iron ornamental grille, with metal letters.
Messrs. George M. Callender & Co.—Bitumen sheeting for the whole of the verandahs, covered ways, and also for tanks.
The Burmantofts Works, Leeds.—Four fireplaces in faience.
Messrs. John Shelbourne & Co.—The architraves for one home.
Messrs. J. Young & Co.—Eye inspection covers for the whole of the drainage system.
Messrs. Lawford & Co.—Asphalte paths.
Messrs. H. & F. Boenten.—Wrought iron for entrance gates.
Messrs. A. J. Arrowsmith & Co.—One pine chimney-piece.
The Accrington Brick and Tile Company (Accrington).—2,000 red facing bricks.
Messrs. Candy & Co. (South Devon).—5,000 brown glazed bricks.
Mr. H. A. Ball.—A 4 ft. 6 in. double oven kitchen range.

Additional Subscriptions.

	£	s.	d.
2,127 Workmen of Messrs. John Mowlem & Co.	80	7	9
Mr. John Mowlem Burt	52	10	0
Mr. George Burt	52	10	0
Mr. W. R. Freeman	52	10	0
Workmen of Messrs. G. H. & A. Bywaters & Sons (per Mr. F. Isaacs)	21	0	0
Workmen of Messrs. Higgs & Hill (per Mr. C. Hays)	15	6	3
Workmen of Messrs. J. Grover & Sons	11	18	9
Mr. E. Yates (per Mr. Marsland)	10	10	0
Mr. J. Bullers (Bermondsey)	5	5	0
Mr. T. W. Haylock	5	5	0
From "C" (Blackheath)	5	0	0
Workmen of Mr. John A. Hunt (Hoddesdon, Herts)	4	3	0
Workmen of Messrs. John Shelbourne & Co.	2	17	3
Workmen of Messrs. John Outhwaite & Son	3	11	3
Messrs. J. H. & E. Dyer (Alton, Herts)	2	2	0
Mr. Charles Thornett (Clapham)	2	2	0
Workmen of the Expanded Metal Co. (West Hartlepool)	2	2	0
Workmen of Messrs. Beaven & Hodges (per Mr. W. H. Pritchard)	1	16	4
Workmen of Mr. E. C. Christmas (Forest Hill)	1	7	0
Workmen of Messrs. D. Dakers	1	6	6
"A Friend" (per Mr. T. F. Rider)	1	1	0
Workmen of Mr. J. Bullers	1	0	0
Workmen of Mr. Charles Thornett		19	0
The Seyssel and Metallic Lava Asphalte Co.	5	5	0
Mr. Thomas Boye and Workmen	1	4	0

ARCHITECTURAL SOCIETIES.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—The officers nominated in connexion with the next session of the Leeds and Yorkshire Architectural Society are:—President, Mr. W. Carby Hall; vice-presidents, Mr. W. H. Beevers and Mr. C. B. Howdill; hon. treasurer, Mr. W. H. Thorp; hon. librarian, Mr. W. H. Beevers; hon. secretary, Mr. F. W. Bedford; council, Messrs. G. Atkinson, W. S. Braithwaite, T. B. Wilson, G. F. Bowman, A. R. Hill (Bradford), and R. Ward; auditors, Messrs. F. Musto and H. Ambler. These names will come up for confirmation at the next general meeting on March 19. On the 5th inst. the Royal Institute of British Architects' prize drawings were on view in the Park-street rooms.

LIVERPOOL ARCHITECTURAL SOCIETY.—At an ordinary meeting of the members of the Liverpool Architectural Society, held on the 5th inst. at the Law Library, Castle-street, Mr. Saxon Snell contributed a paper on "Public Baths and Washhouses." A similar paper by Mr. Snell was read before the Architectural Association last session and fully reported in our issue for March 11, 1899.

BRISTOL SOCIETY OF ARCHITECTS.—The ordinary monthly meeting of this Society was held at the Fine Arts Academy, Queen's Road, Clifton, on Monday evening, Mr. W. L. Bernard, President, in the chair. Mr. Peter Addie, the City Valuer, read a paper on "The Removal of Insanitary Areas and the Management of Improvement Schemes under the Housing of the Working Classes Act," which dealt very fully with the various provisions of the Act, and the many difficulties encountered in the adoption and carrying into effect of these provisions. Mr. Addie's experience at Birmingham and elsewhere goes to show that it is a very

difficult problem to provide working-class dwellings at moderate rental without some aid from the rates, especially in city areas, and if the workers are housed in the suburbs the extra cost of rail or tram communication must be considered. On the conclusion of the paper, a hearty vote of thanks was proposed by Mr. Frank Wills, and seconded by Mr. J. H. La Trobe, both gentlemen testifying to the very interesting nature of the paper, and to the ability and courtesy of the City Valuer. Councillor Gilmore Barnett then discussed the paper at some length, showing how vitally this question affected the community, and some of the difficulties with which the problem bristles. Councillors W. W. Hughes and H. F. Cotterell also spoke, and supported the vote of thanks. After Mr. Addie had acknowledged the vote of thanks, a discussion took place amongst the members, and the view was generally held that the cost of building increased the difficulty of a satisfactory solution, more especially as the sound contract work of the municipality could not be done at the same low rate as inferior speculative work. The Hon. Secretary, in his remarks, pleaded for some alleviation of the inartistic and depressing appearance of these dwellings, even at a slight addition to the rates, and the influence of cleanliness and order on the morals of the workers by a certain amount of supervision was freely admitted.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the general meeting on the 7th inst., the Rev. Sir Talbot H. B. Baker, Bart., in the chair, Mr. C. E. Keyser, M.A., F.S.A., contributed a paper on the mural paintings which had recently been discovered or brought to his notice in the South of England since his last paper on the subject in June, 1896. Among the more interesting examples referred to were those at Kingston, Cambridgeshire; Stowell and Bishop's Cleve, Gloucestershire; Ford, Sussex; Ashmansworth, Hampshire; and Poundstock and Poughill, Cornwall. No new subjects had been noted, nor had the discoveries, as a rule, been of great importance. Dr. H. A Lediard read a paper on Samplers. The absence of any literature dealing with the origin of the sampler rendered it difficult to date the time at which the work was first undertaken; but the earliest poetic reference came from the Laureate Skelton. In the first instance the sampler was worked and kept for the sake of the designs, which were introduced from religious establishments abroad. The early long sampler consisted of embroidery and lace work, and was done by the nobility and the leisured classes. The degeneration of the sampler was due to the work becoming a school task, as well as to other reasons, and the decadence of the pattern is marked. The alphabet was seen on the early samplers in a subordinate position; it then absorbed the chief position in some seventeenth century work, and finally drifted into a secondary place. The cut work was soon lost, and its place was taken by specimens from the zoological and botanical kingdoms. The materials used for sampler work was touched on and allusion made to the various paths followed by children working samplers: family registers, creeds, needlework pictures, verses, and texts, all being found in cross stitch as well as other forms of stitching. The border of the sampler was introduced when the idea came to make the work into a picture for framing, as the old samplers had no border of any kind. Among the numerous samplers exhibited by Dr. Lediard, several had been kindly lent by Mrs. Head and Miss Gully; and a few of the lantern slides were taken from samplers in South Kensington Museum and from the Rawlinson collection in the Bodlian, Oxford. Messrs. Rice and Green took part in the discussion.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—A meeting was held on the 7th inst., Dr. W. de Gray Birch, V.P., F.S.A., in the chair. The Hon. Secretary, Mr. Patrick, directed the attention of the meeting to a letter, which had appeared in the *Westminster Gazette*, respecting the Castle of Launceston in Cornwall, said to be in danger of falling. The meeting expressed the hope that steps would be taken without delay, either by the authorities of the Duchy of Cornwall, or by Lord Halsbury as Constable, to preserve this historical building from destruction. Mr. I. C. Gould exhibited a parchment dated 1604, which contained a curious clause with respect to the marriage of young men in relation to loans of money. The Rev. H. J. D. Astley, Hon. Editorial Secretary, read a paper entitled "Two Norfolk Villages," being those of East and West Rudham, situated on the main road between Lynn and Fakenham. Rudham lies in the heart of an Anglican locality surrounded by places having names that tell of Anglian settlement, such as Hillington, Massingham, Dersingham, Sandringham, &c. Of Rudham in prehistoric days there is unmistakable evidence in the numerous celts of neolithic workmanship which have been found from time to time in gravel pits within the limits of the two parishes. A remarkably fine one, found at East Rudham, having beautiful polish and finish, was laid upon the table for exhibition. At the time of the Norman survey, Rudham—not yet divided into East and West—belonged to William Earl Warrenne. Churches existed at Rudham in Saxon and Norman times, but no vestige of either now remains. Coxford, or Cokesford, Priory is situated within the parish of East Rudham, and the two churches of East and West Rudham are mentioned in the charter of foundation as included in the possessions of the Priory, which was a house of Augustinian Canons. Much of the present church of St. Mary, East Rudham, is modern, as some twenty-five years ago the greater portion of the western tower fell, destroying the nave, but there are several exceedingly interesting features still remaining in the church, including a beautiful pillar piscina, with an aumbry over it in the thickness of the wall. In the south transept is a low side window and a piscina with an ogee arch. The south porch has a fine groined roof, with Tudor roses at the intersections, and a central boss upon which is represented the Holy Trinity. The Divine Father is shown seated, supporting between his knees the Divine Son upon the Cross, the arms of which are upheld by the hands of the Father. The representation of the Holy Spirit upon the head of the Father in the shape of a dove, although very much worn away, is still discernible. When the church was restored, after the fall of the tower in 1876, a discovery of an interesting nature was made in the northern wall of the sacrarium at the level of the floor. This consisted of numerous fragments, mostly greatly defaced, of carved figures and other subjects in alabaster. They had subsequently been hidden away, and were only brought to light again by Mr. Astley in 1896. He, with the help of Mr. Patrick, pieced them together and found that they mainly constituted the remains of what must at one time have been a very beautiful reredos of fifteenth-century date—together with some other portions of what may have been an altar frontal. Remains of colour and gilding still exist upon some of the pieces. The paper was illustrated by photos and sketches and some of the tiles from Coxford Priory. Mr. Patrick, hon. secretary, exhibited and explained the drawings he had made of the remains of the reredos and other features of the church. In the church of West Rudham are some good corbels representing Henry VIII., Jane Seymour, and Edward VI., also some fine sixteenth-century bench ends, with elaborate poppy heads, all dissimilar. There are some ancient thirteenth-century stone coffin lids by the south door, and a curious seventeenth-century alms-box, with three remarkable padlocks. On the western face of the easternmost pillar of the nave arcade in this church, close up to the necking of the capital, is an elegantly-shaped aperture, 7 in. in length and 4 in. wide, with trefoil head, which was probably the receptacle of a heart burial. The register of West Rudham is dated 1565.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.—A meeting of this Society was held on Tuesday evening, the 6th inst., at the London Institution, Finsbury-circus. Mr. E. W. Brabrook presided, and briefly introduced Mr. T. W. Shore, who read a paper to the meeting entitled "The Anglo-Saxon Settlement Round London and Glimpses of Anglo-Saxon Life in and near it." Mr. Shore, who is hon. secretary of the Hampshire Archæological Society, said there never was a kingdom of Middlesex, but that district seemed always attached to London and was, apparently, so described in A.D. 912. This area was in early times covered mostly by a large forest, and at the date of the Domesday Survey it afforded pannage for 17,000 hogs, thus pointing to beech and oak as being the principal trees. A forest was a great advantage to a city in those days, as the timber supplied wood for building, fuel, and charcoal for handicraftsmen. London was the commercial seat of the Anglo-Saxons, and thus Norwegians, Swedes, and Danes congregated there. A great number of Anglo-Saxon coins have been found in Gothland; this testified to the large trade done by the Goths with England. The wealth of London at this time had been established. Mr. Shore questioned whether the foundation of London was to be attributed to the East Saxons; he was of opinion that the Kentish men were the first settlers of London and its neighbourhood, and quoted many place names round London in support of that view. Then there was the custom of gavelkind, as contrasted with the common law of primogeniture. The Kentish custom in some of the suburbs certainly existed till almost within living memory, and he was not sure that it was even yet quite extinct. He also mentioned the Saxon origin of St. Paul's and of many of the City churches and wardmote courts. —Mr. Charles Welch, hon. secretary, proposed a hearty vote of thanks to Mr. Shore for his interesting paper. This was agreed to. The Chairman then announced that, by the kind invitation of the treasurer, Mr. Alderman Vaughan Morgan, a meeting of the Society would be held at Christ's Hospital, on Friday, April 20th, further particulars of which will be announced.

THE LONDON COUNTY COUNCIL.

THE statutory annual meeting of the London County Council was held at the County Hall, Spring Gardens, on Tuesday, Lord Welby, the retiring Chairman, presiding at the beginning of the proceedings.

Election of Chairmen and Committees.—The first business was the election of Chairmen and Committees. On the motion of Mr. Strong, seconded by Earl Carrington, Alderman Dickinson was elected Chairman. Mr. Torrance was elected Vice-Chairman, and Mr. Fletcher Deputy-Chairman. The various Committees were then elected. The following Councillors constitute the Building Act Committee:—Messrs. E. Bond, C. Goddard Clarke, W. Davies, G. Dew, Lieut.-Col. C. Ford, R. W. Granville-Smith, Sir John Hutton, C. Jerome, G. B. Longstaff, R. Parker, W. H. C. Payne, R. Strong, H. R. Taylor, D. S. Waterlow, E. White.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Greenwich District Board 6,300*l.* for paving works; the Limehouse District Board 21,792*l.* for wood-paving works; the Plumstead Vestry 1,600*l.* for sewer and other works; the St. Pancras Guardians 4,460*l.* for alterations at St. Anne's Home; the Guardians of Stepney 5,845*l.* for erection of a boiler-house, &c.; and the Wandsworth Baths Commissioners 36,000*l.* for site for and erection of baths.

Architectural Features, Holborn to the Strand Street.—The report of the Improvements Committee with regard to the architectural features of the new street, brought up on February 20,* and recommending the selection of eight architects to submit designs, was withdrawn for one week in consequence of the Institute of British Architects desiring to approach the Committee by deputation on the subject.

Notice has been given of the following amendments on recommendation *a*:—

By Mr. Bull: "That the recommendation be referred back to the Committee for further consideration."

By Mr. Emden: "That the following words be added:—'Subject to Clause XV. of the proposed form of invitation being modified by the substitution of the words "granite, terra-cotta, or other suitable material" for the words "or granite;" and Clause XVI. by the substitution of the words "to be" for the words "suggested is Palladian freely treated and."'"

Tottenham Court-road at Bozier's-court.—The same Committee recommended, and it was agreed, that the supplemental estimate of 21,870*l.*, submitted by the Finance Committee in connexion with the widening of Tottenham Court-road at Bozier's-court, be approved.

Housing of the Working Classes. — The Housing of the Working Classes Committee reported on the desirability of amending the Act of 1890 so as to empower the Council to acquire land outside the county for the erection of working-class dwellings and other matters. The Committee had forwarded to the Local

* See our issues for February 24, page 187, and March 10, page 240.

Government Board the following expression of opinion :—"That the law should declare that it is the duty of the freeholder to see that dwelling-houses on his property are fit for human habitation by enforcing the repairing clauses in his leases, and taking all other necessary steps. Where an official representation under the Act has declared that the dwelling-houses in question are not fit for human habitation the freeholder should have the power to re-enter into possession, but there should be put upon him the obligation to rebuild upon the site dwelling houses for the working classes. In the event of the freeholder not fulfilling this obligation, the local authority should be empowered to take possession of the land, paying only the market value of land subject to the obligation to rehouse persons of the working classes, and the local authority should then be required to rebuild dwelling houses for the working classes on that site." The committee asked the Council to approve of its action. Mr. H. P. Harris moved, and Dr. Longstaff seconded : "That the recommendation be referred back in order that the committee may bring up definite recommendations as to amendments of the Act other than those which have already been approved by the Council." After some discussion, the amendment was defeated, and the committee's recommendation was agreed to.

Trafalgar-road Scheme, Greenwich.—The same Committee recommended—

"That the estimate of 12,573*l.* submitted by the Finance Committee in respect of the cottages to be erected on the vacant land acquired under the Trafalgar-road scheme, Greenwich, be approved ; and that the Housing of the Working Classes Committee be instructed to proceed with the erection of the cottages."

The recommendation was agreed to.

The Gladstone Memorial.—We printed last week the proposals in regard to a site for the Gladstone memorial statue. After some discussion, the following recommendation of the Improvements Committee was agreed to :—

"That, subject to the assent of her Majesty's Commissioners of Works, &c., being obtained to the erection of the memorial, in compliance with the Act 17 and 18 Vict., cap. 33, and upon the condition that the exact position and the substructure of the memorial, together with the architectural and other details thereof, shall be entirely subject to the Council's approval, the Council do allot to the Gladstone Memorial Committee a site to the west of St. Clement Danes Church for the purpose of the monument proposed to be erected by the Memorial Committee."

Tramways : Proposed New Depôt, Holloway-road.—On the recommendation of the Improvements Committee, the following was agreed to :—

"That the Council do approve the estimate of 20,000*l.* to be submitted by the Finance Committee ; that the Council do approve of the acquisition, at a price not exceeding 4,500*l.*, of the freehold interest of the piece of land in Holloway-road near the 'Nag's Head' public-house ; and that the Council do also approve of the erection, by the North Metropolitan Tramways Company, at an estimated cost of 15,000*l.*, and to the satisfaction of the Council's architect, of a building upon the site referred to for the use and accommodation of the company under its lease from the Council, dated October 14, 1897."

Paving Works, Boundary-street.—The Housing Committee recommended, and it was agreed,

"That the work of permanently paving Navarre, Camlet, and Ligonier streets, under the Boundary-street scheme, be executed by the Council without the intervention of a contractor ; and that the plans, specification, quantities, and engineer's estimate of 4,940*l.* in respect of the work be referred to the manager of works for that purpose."

Catherine-street, Strand.—The Improvements Committee brought up a Report in regard to the widening of Catherine-street, immediately to the south of Drury Lane Theatre. According to the report, the Strand District Board have arranged with the freeholder of the land situated on the eastern side of Catherine-street between Drury Lane Theatre and a point opposite York-street to give up, free of cost, the land needed for the improvement on condition that the Board acquire the leasehold interest in a portion of the land in question, which is at present occupied. The present width of Catherine-street between Exeter-street and York-street varies from 45 ft. to 55 ft., and in connexion with the Holborn to the Strand improvement it is proposed to increase this to a width varying from 55 ft. to about 70 ft. The width of the portion of Catherine-street between York-street and Drury Lane Theatre is only about 40 ft., and the proposal of the Board is to increase this to 50 ft. The Committee recommended that the Council do contribute, on the usual conditions, one-third of the net cost of the widening of Catherine-street to the south of Drury-lane Theatre, as shown upon the plan forwarded by the Strand District Board.

This was agreed to.

Holborn to Strand Street : Re-instatement of Gaiety Theatre, &c.—The following recommendation of the same Committee was also adopted :—

"That, in connexion with the Holborn to Strand improvement, authorised by the London County Council (Improvements) Act, 1899, the Council do approve the allocation of the sites for the re-instatement on the western plot between the new crescent road and the Strand of the Gaiety Theatre, Gaiety Restaurant, and Messrs. Short's premises, such sites to have an area of about 12,860, 10,450, and 2,100 square feet respectively, as shown upon the plan presented to the Improvements Committee on February 28, 1900, and that the solicitor be instructed to take the necessary steps to give effect to this arrangement and to carry out all the provisions of the Improvements Act of 1899 in regard thereto."

The Westminster Improvement.—The Parliamentary Committee reported that her Majesty's Office of Works had asked that various amendments should be inserted in the part of the London County Council (Improvements) Bill relating to the Westminster improvement. The principal amendment required by the Office of Works was that it should be made clear in the Bill that the land between the new Millbank-street and the Embankment should be laid out as a garden. They recommended that such a clause should be inserted in the Bill. This was arranged.

Greenwich Tunnel and Payments to Contractors.—The following recommendation of the Bridges Committee was adopted :—

"(*a*) That the Greenwich Tunnel contract be amended by the introduction of the following words :—'No advances shall be made upon plant, but the engineer may, if he think fit, certify from time to time for advances upon materials delivered on the works, but not fixed, at a rate not exceeding 60 per cent. of his estimate of the value of such materials.'

(*b*) That the solicitor be instructed to amend the contract accordingly, and that the seal of the Council be affixed to the same when ready."

Fixing Hydrants.—The Fire Brigade Committee recommended, and it was agreed :—

"That the estimate of 1,560*l.* submitted by the Finance Committee be approved, and that the West Middlesex Waterworks Company be required to fix in its Nos. 31 and 32 districts 120 hydrants with single outlets, such hydrants to be obtained of Messrs. J. Blakeborough & Sons at a cost of 2*l.* 1s. 3d. each, including 4-in. flange-piece and surface-frame."

Enlargement of Rotherhithe Fire-Station.—On the recommendation of the same Committee, it was agreed :—

"That the supplemental estimate of 330*l.* submitted by the Finance Committee in respect of the enlargement of the Rotherhithe station be approved ; that the Council do sanction the expenditure of that sum in connexion with the execution of a further part of the work incidental to the enlargement of the station ; and that such work be carried out by Mr. B. Nightingale at the schedule of prices to the contract recently entered into with him."

Improvements.—The following recommendations of the Improvements Committee were agreed to :—

"That the estimate of 210*l.* 5s. submitted by the Finance Committee be approved, and that the Council do contribute on the usual conditions one-half of the net cost of the widening of High-street, Clapham, at Nos. 70 and 72, such contribution not to exceed the sum of 210*l.* 5s."

"That the widening of High-street, Kensington, sanctioned by the London County Council (Improvements) Act, 1899, be carried out in accordance with the red dotted lines shown upon the plan submitted to the Improvements Committee on October 4, 1899."

Ballast and Cement, Brockwell Park.—The Parks and Open Spaces Committee recommended, and it was agreed :—

"(*a*) That the Council do accept the tender of Mr. H. Covington to supply Thames ballast for use in connexion with the concreting of the lake at Brockwell Park at the rate of 0s. 6d. per yard ; that the solicitor do prepare the necessary contract, and that such contract be sealed when ready."

"(*b*) That the Council do accept the tender of Messrs. A. H. Lavers, Limited, to supply Portland cement for use at Brockwell Park, at the rate of 1*l.* 11s. 10d. per ton ; and that the solicitor do prepare the necessary contract, such contract to be sealed when ready."

Supply of Gravel, Sydenham Wells Park.—It was also agreed—

"That the Council do accept the tender of Messrs. Hall & Co., Limited, to supply fine Croydon gravel for use at Sydenham Wells Park at the rate of 9s. 6d. per yard ; and that the solicitor do prepare the necessary contract, such contract to be sealed when ready."

Sanitary Condition of St. Pancras.—The Public Health Committee reported as follows :—

"On October 10 last, the Council, after considering Dr. Hamer's Report on the sanitary condition and administration of the parish of St. Pancras, decided to make a representation to the Local Government Board under Section 107 (2) of the Public Health (London) Act, 1891, that the Vestry had failed to appoint a sufficient number of sanitary inspectors. We have now to report that after correspondence with the Vestry the Local Government Board have decided that an inquiry into the case shall be held by one of their inspectors during the autumn of this year."

Theatres, &c. — The following applications under the Metropolis Management and Building Acts Amendment Act, 1878, were, on the recommendation of the Theatres and Music Halls Committee, agreed to :—

Arrangements at Battersea Public Baths (Mr. F. J. Smith, February 26).

Seating arrangements for a cinematograph entertainment in the music court of the Crystal Palace (Mr. H. Gillman, February 20).

Revolving doors in the stalls corridor, Drury Lane Theatre (Mr. C. Muggeridge, February 28).

Arrangements at New Cross Empire (Mr. F. Matcham, March 1).

Arrangements, Theatre Royal, Kilburn (Mr. J. D. Solomon, February 28).

Alterations, London Music Hall, Shoreditch (Mr. F. Matcham, February 14).

Alterations, London Pavilion, Piccadilly (Messrs. Wylson & Long, February 26).

New Theatre, at the corner of St. Martin's-lane and St. Martin's-court. The site of the proposed building complies with the regulations, as, out of a total boundary of 310 ft., it has 75 ft. fronting to St. Martin's-lane, which is over 40 ft. wide and 85 ft. to St. Martin's-court, which is being widened to 20 ft. The theatre will be a small one with accommodation for only 762 people (Mr. F. Matcham for Mr. C. Newman).

Dancing Academy, Tavistock-place (Mr. F. W. Foster for Mr. H. R. Johnson).

The Council adjourned at 7.20 p.m.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the following applications under the London Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated :—

Lines of Frontage.

Woolwich.—Twenty-one houses with shops, on the north side of High-street, Eltham, between a house known as Montrose and Elderslie-road (Mr. G. F. Logsdail for Mr. A. Cameron Corbett, M.P.).—Consent.

Islington, East.—Rebuilding of Nos. 146, 148, 150, and 152, Holloway-road, Islington, with bay windows and a one-story shop in front (Mr. A. Roberts for Messrs. Williams Brothers).—Consent.

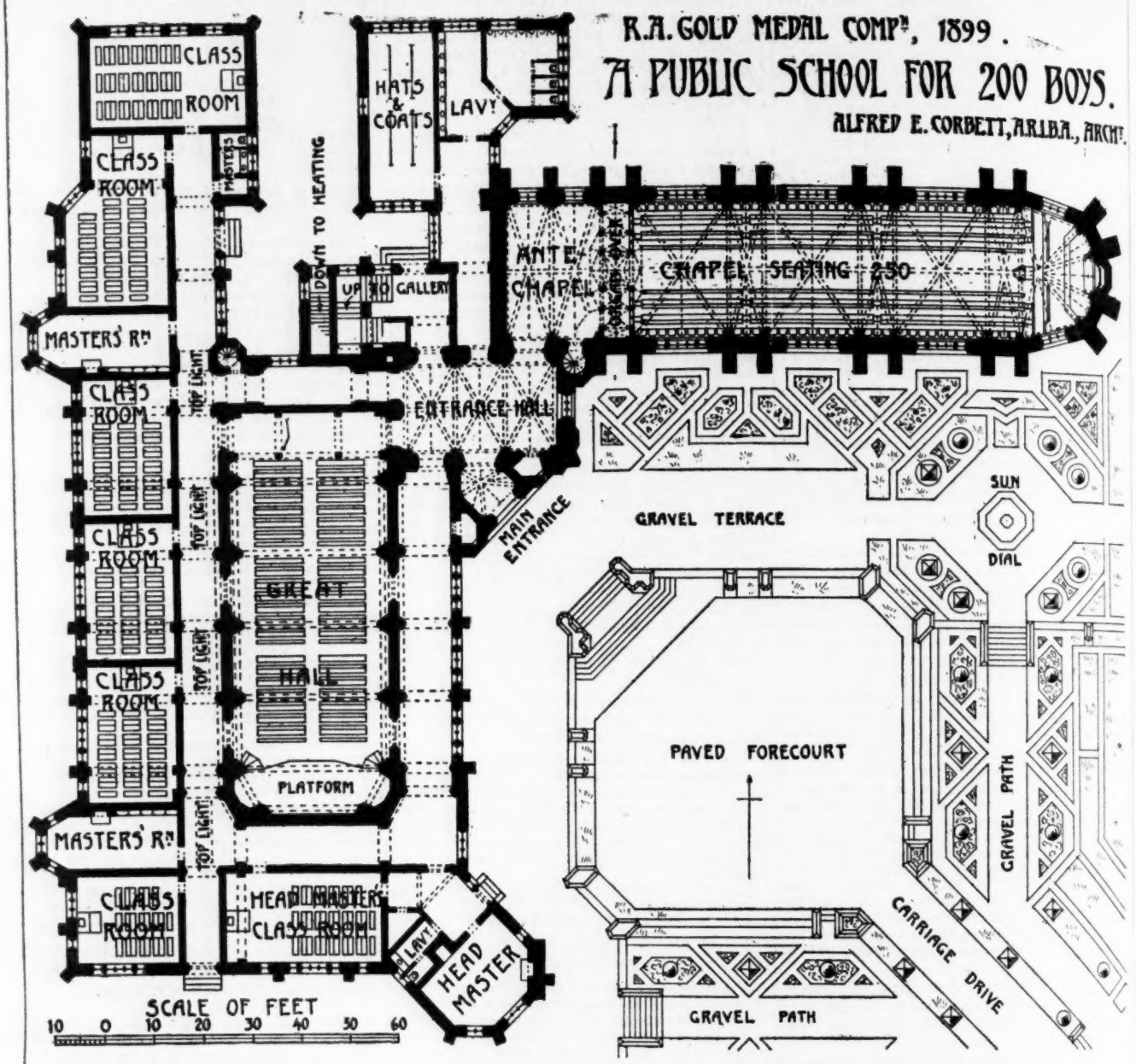
Projections.

Holborn.—An oriel window, on the first, second and third floor levels, in front of Nos. 90 and 91, High Holborn (Mr. W. C. Waymouth for Mr. W. Leggott).—Consent.

Strand.—A porch with projecting iron and glass shelter in front, at the dining-room entrance to the Marlborough Hotel, Bury-street, St. James's, and the erection of an iron and glass shelter at the entrance to the hotel, at the corner of Bury-street and Rider-street (Mr. G. W. Aylmore for Mr. W. G. Hornsey).—Refused.

Working Class Dwellings.

Bermondsey.—That the Council do make an order as follows : Whereas Messrs. Francis Chambers & Son, of 11A, College-hill, Cannon-street, E.C., on February 22, 1900, under the provisions of Section 42 of the London Building Act, 1894, delivered, on behalf of the Donkin Land Company, at the County Hall, plans of ten blocks of intended dwelling-houses, to be inhabited by persons of the working



class and proposed to be erected, not abutting upon a street, in a yard at the rear of Nos. 55 to 77, Southwark Park-road, Bermondsey, extending back to Cadbury-road. . . . the Council does by this order disapprove of, and refuse to sanction, the said plans. That the seal of the Council be affixed to such order; and that notice of the disapproval be given to Messrs. F. Chambers & Son.—Agreed.

Illustrations.

A PUBLIC SCHOOL FOR 200 BOYS.

THIS design was submitted in competition for the Royal Academy Gold Medal, 1899, and is the outcome of an endeavour to carry out the conditions of competition as closely as possible.

The conditions stated "The class-rooms must be contiguous to the great school-room, and the latter should also be connected with the chapel by a vestibule or cloister, or by an entrance-hall under a tower. The ground in front should be laid out as a formal garden, with a gateway and porter's lodge." This seemed to imply an enclosing wall round the building, with only one entrance for masters, boys, and visitors. This entrance is taken as the natural focus of the grouping of building and garden, and is emphasised by the tower over the entrance hall, which dominates the design. Similarly on plan the entrance hall is the centre from which the great hall and its gallery, the chapel, and the cloak-rooms, &c., are entered, the head-master's room being approached from it along a corridor for the sake of quiet. The lavatory block is well cut off by a cross-ventilated lobby. Supervision would be easy, as one master in the entrance hall and one at the door of the master's room, diagonally opposite, could see along the whole of the corridors. The master's rooms were arranged where shown, as they were required to be "in connexion with the class-rooms." Three additional exits are provided for emergencies, including a direct exit from the gallery. Provision is made in the basement for heating apparatus to heat the whole building.

The subject seemed to call for a simple and dignified treatment of the exterior, with a feeling of mass and solidity, variety being sought in the design of the window tracery, and a little richness concentrated on the east end of the chapel.

Internally the great hall is panelled to a height of 13 ft.; the wall-piers carry rear-arches over the windows, a moulded shaft running up to support the principals of the rather heavy timber roof. The chapel is groined in stone, as indicated on the plan; the wall-ribs of the wide bays come close over the window arches, the diagonal and ridge ribs rising 6 ft. higher; the narrow bays, expressed externally by the coupled buttresses, have very flat elliptical wall-ribs; this would give dark narrow bays of something approaching barrel vaulting, with the wide intermediate bays domed up over the windows. The canted sides at the east end, and the apsidal treatment of groining, concentrate attention on the altar and reredos, the latter being set back in a small recess under a deep carved and moulded arch under the groining. ALFRED E. CORBETT.

SMALL HOUSES.

THE two sheets of plans and elevations of small houses designed by Mr. C. E. Bateman are given as illustrations to his paper on the subject read before the Architectural Association last week and reported on another page.

The illustrations are all drawn to a uniform scale. One sheet gives examples of single houses and the other of pairs of houses. The first of the former, in the left-hand top corner, was designed for a small farmer working about twenty acres of land, who was his own builder and executed the work (in 1895) at a cost of 435*l*. The next, at Sutton-in-Ashfield, has not yet been carried out. For the third, with single-stall stable and coach-house, a tender was obtained (in 1896) of 888*l*.

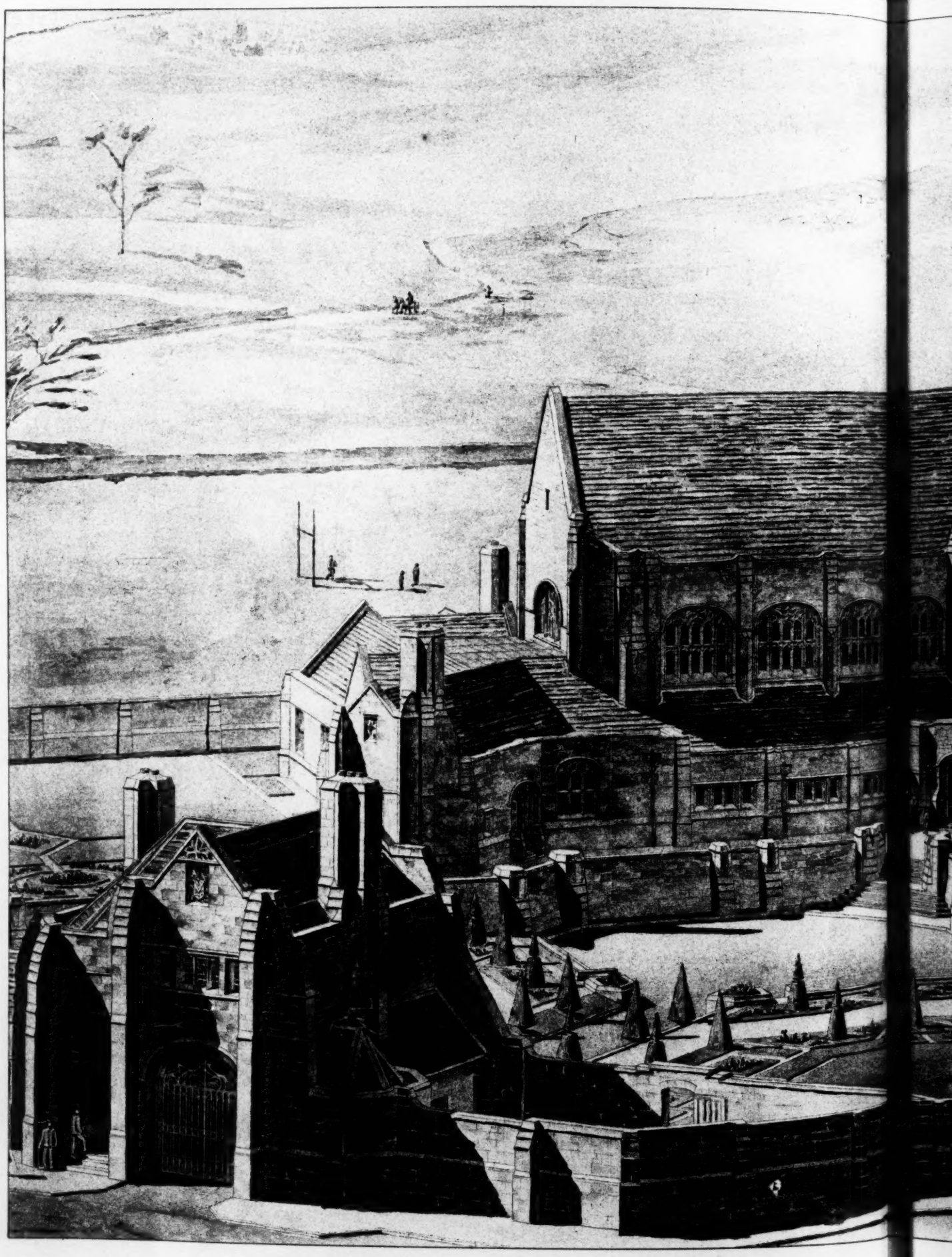
The example in the bottom left-hand corner, with two attics (built in 1893), cost 1,300*l*., and the stables 230*l*.

The ground floors were laid with wood blocks, and the upper stories were hung with green slates, the roofs being tiled.

The two examples of lodges finished (1891) in the same way cost 405*l*. each. The last example is that referred to in the description of "the lower limit," and was executed in 1892 at a cost of 750*l*.

Of the pairs of houses, those at the top on the left-hand side have not been executed; the adjoining pair (built in 1892) cost 1,450*l*.

The next two were designed for a builder, who returned the net cost at 1,200*l*., and 1,275*l*. The design for the fifth pair was abandoned for the last example, which was executed with old bricks and old tiles and Bath



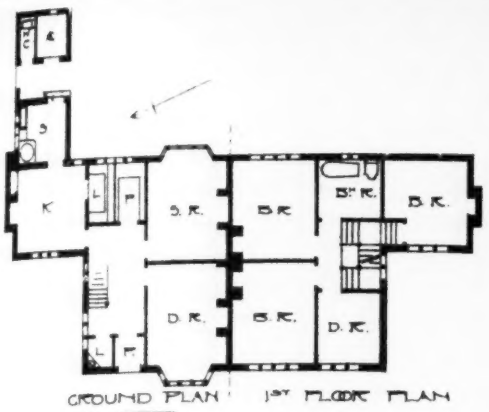
DESIGN FOR A SCHOOL: SUBMITTED IN COMP[illegible]ON FO

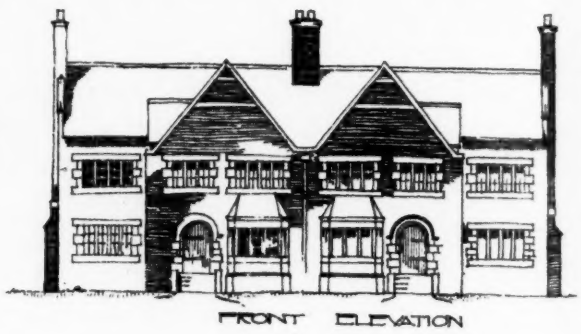
By Mr. Alfred [illegible]ETT, A.

INK-PHOTO SPRAGUE & C° L^TD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

COMPE[TI]ON FOR THE ROYAL ACADEMY GOLD MEDAL.

[ALFRED E] C[ORBE]TT, A.R.I.B.A.





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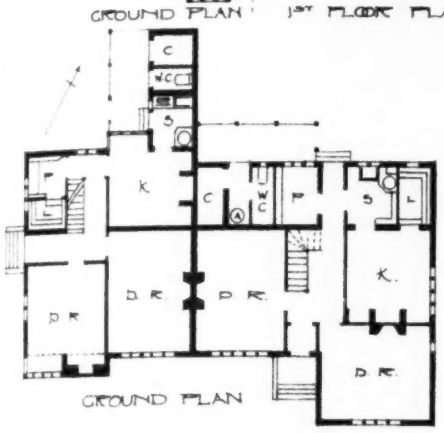

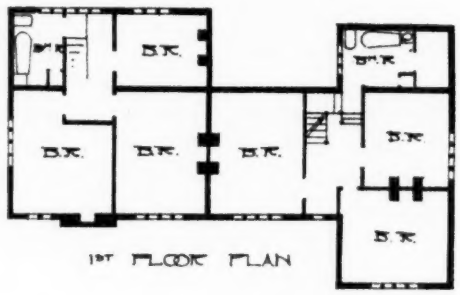

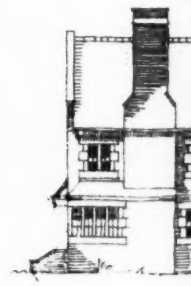

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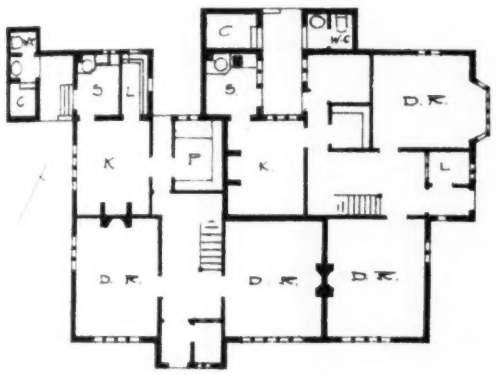

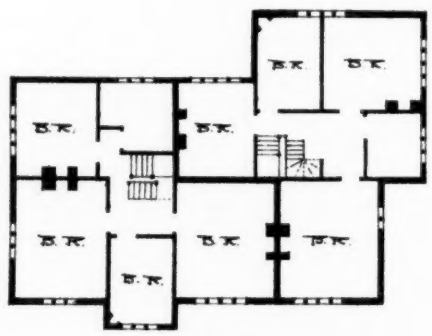

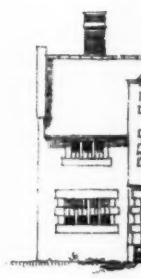

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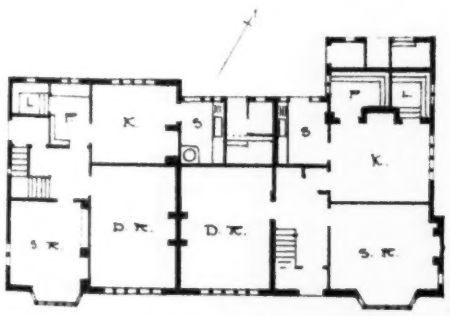
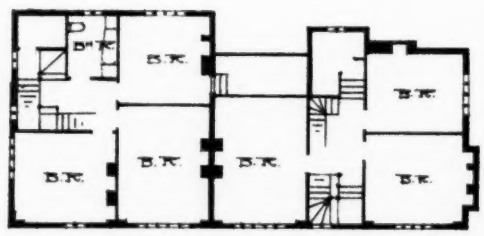
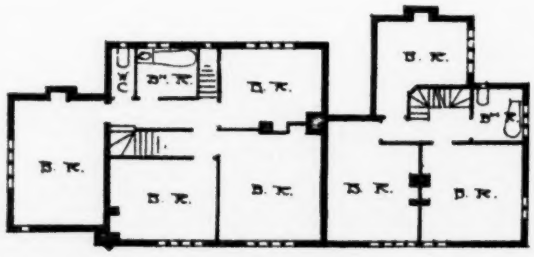
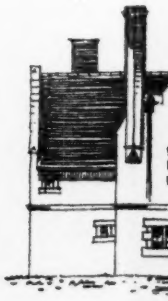




CASTLE BROMWICH

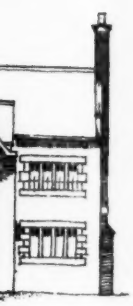


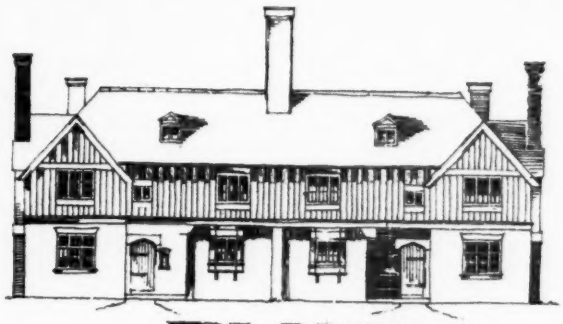


CASTLE BROMWICH

SMALL HOUSES.—Mr. C.

In Illustration of Mr. Bateman's





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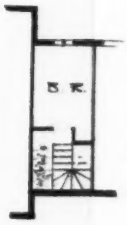
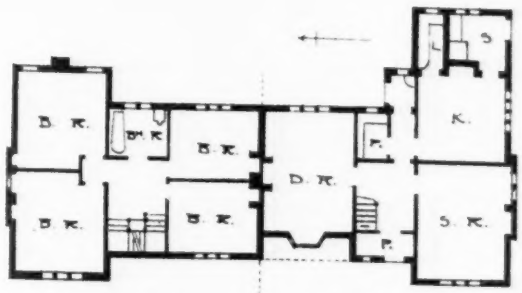


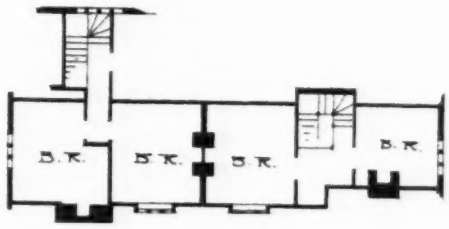


1ST FLOOR PLAN GROUND PLAN

KINGSHEATH

FRONT ELEVATION

WEST ELEVATION

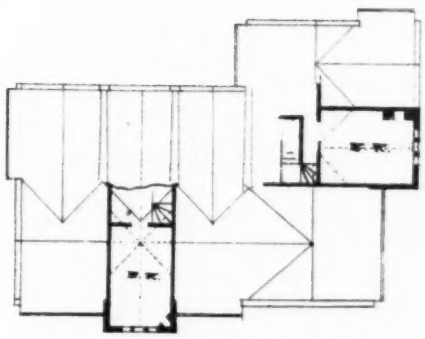


ATTIC PLAN

WORCESTERSHIRE

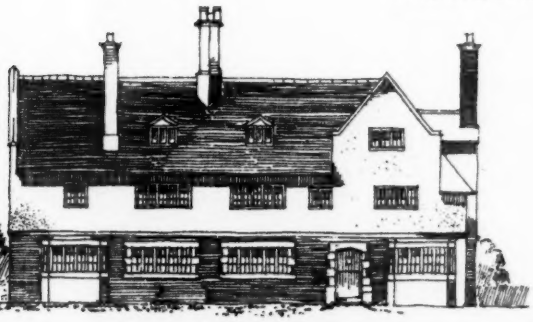
FRONT ELEVATION

EAST ELEVATION



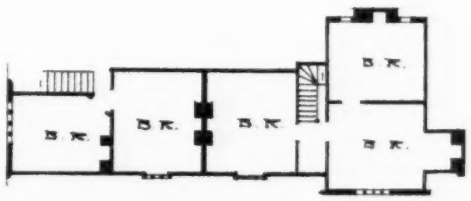
ATTIC PLAN

WORCESTERSHIRE



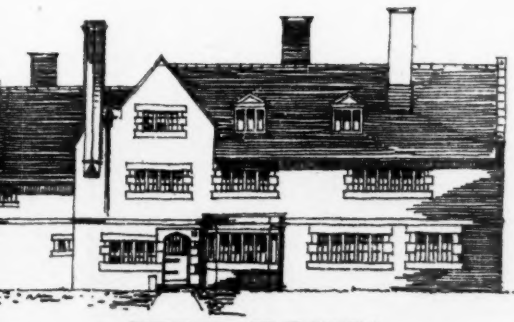
FRONT ELEVATION

WEST ELEVATION



ATTIC PLAN

WARWICKSHIRE



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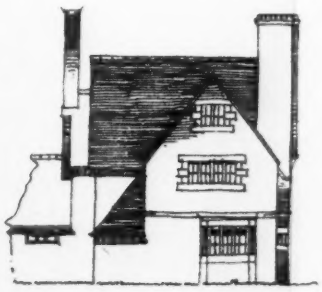

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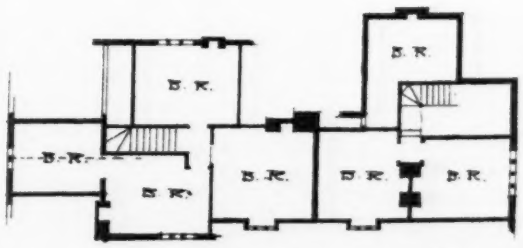


ATTIC PLAN

Bateman & Bateman
Architects Birmingham

feet. 0 1 10 20 30 40

Scale of Feet.

PHOTO LITHO SPRAGUE & C.° LT.° 4 & 5 EAST HARDING STREET, FETTER LANE E.C.

ES.—MR. C. E. BATEMAN, F.R.I.B.A., ARCHITECT.

BATEMAN'S PAPER AT THE ARCHITECTURAL ASSOCIATION.

N.E. ELEVATION

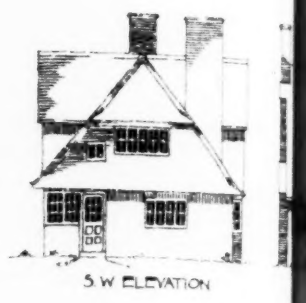
S.E. ELEVATION

S.W. ELEVATION

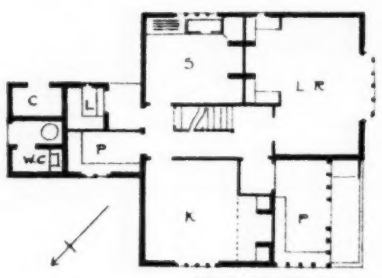
N.W. ELEVATION

EARLSWOOD. WARWICKSHIRE.

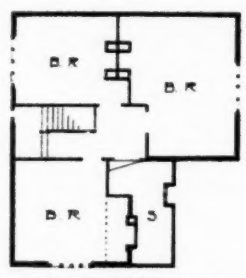
S.E. ELEVATION


S.W. ELEVATION

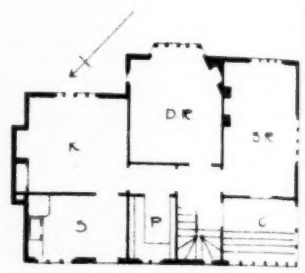
SUTTON in [illegible]FIELD.



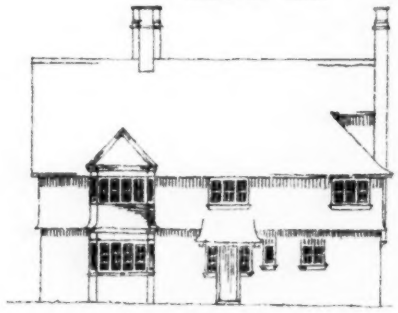
GROUND PLAN



FIRST FLOOR PLAN

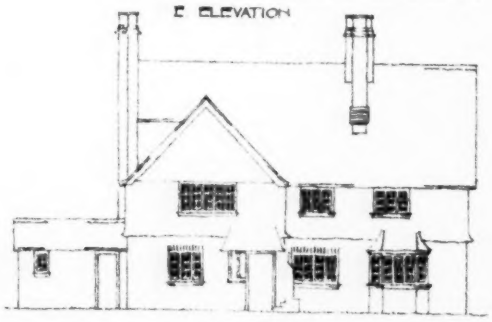


GROUND PLAN

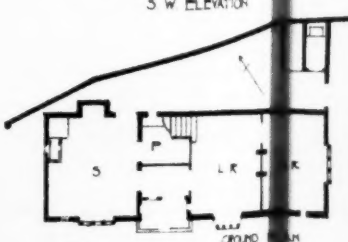

E ELEVATION

N. ELEVATION

S.W. ELEVATION

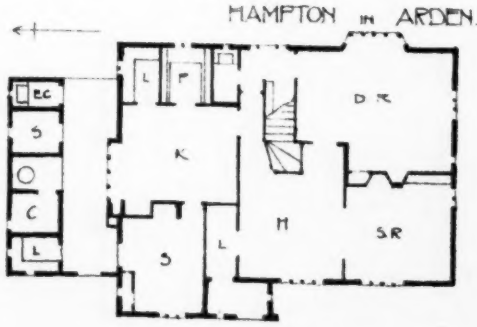

W. ELEVATION

S. ELEVATION

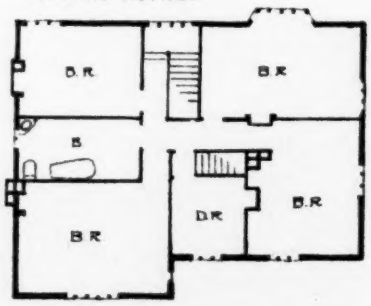


S.W. ELEVATION

HAMPTON in ARDEN. WARWICKSHIRE.

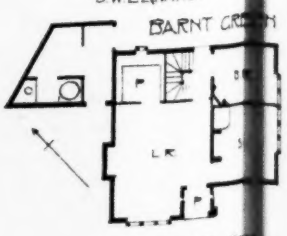


GROUND PLAN



FIRST FLOOR PLAN

BARNT GREEN WOR[illegible]



GROUND PLAN

SMALL HOUSES.—Mr. C. E. Bateman,

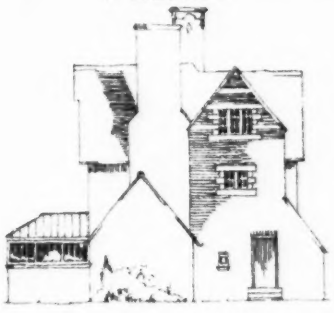
In Illustration of Mr. Bateman's Paper at th

N.E. ELEVATION

N. ELEVATION

W. ELEVATION

N.W. ELEVATION

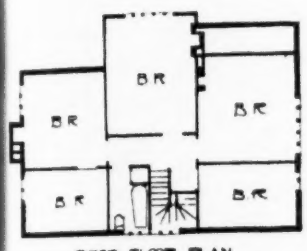


E. ELEVATION

S. ELEVATION

FIELD. NOTTS

CASTLE BROMWICH
WARWICKSHIRE



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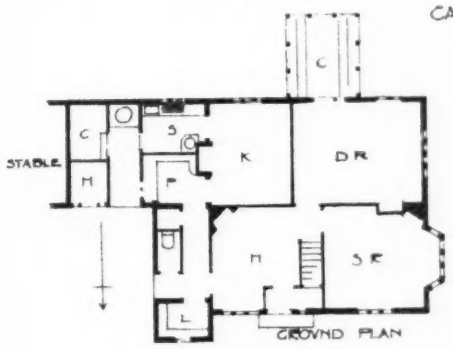
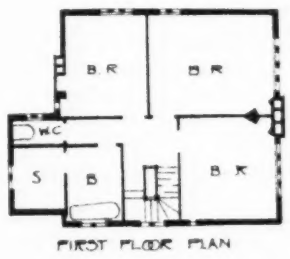
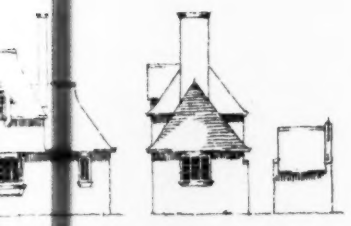


GROUND PLAN

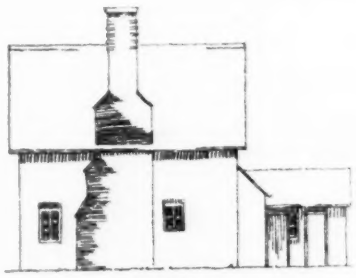


FIRST FLOOR PLAN



S.E. ELEVATION

N.E. ELEVATION



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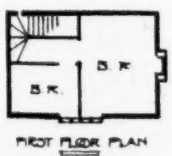
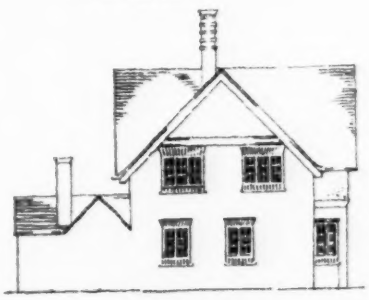


FIRST FLOOR PLAN

S.W. ELEVATION

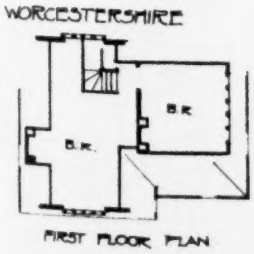


N.W. ELEVATION

S.E. ELEVATION

WORCESTERSHIRE

KINGS HEATH WORCESTERSHIRE



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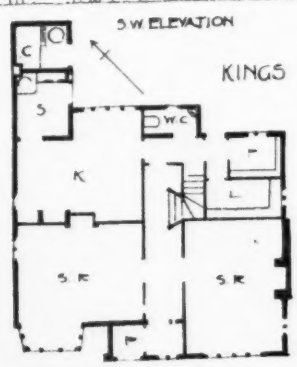
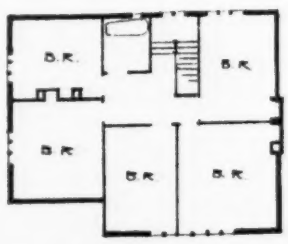


GROUND PLAN



FIRST FLOOR PLAN

Scale of Feet.

Bateman & Bateman.
Archts. Birmingham.

PHOTO LITHO SPRAGUE & C° LT° 4 & 5 EAST HARDING STREET FETTER LANE E.C.

R. C. E. BATEMAN, F.R.I.B.A., ARCHITECT.
MAN'S PRIZE AT THE ARCHITECTURAL ASSOCIATION

stone windows in 1896, at a cost of about 1,675*l.*, including gardens, fencing, &c., complete.

THE SURVEYORS' INSTITUTION:

UNDERGROUND WATER.

A MEETING of the Surveyors' Institution was held on Monday evening last at Great George-street, Westminster, S.W., Mr. T. M. Rickman, President, in the chair.

The minutes of the last meeting having been read and confirmed, and some donations to the library announced, a paper on "Underground Water" was read by Mr. John Shiress Will, Q.C.

The author said that the law with regard to the question of the ownership in underground water first became definitely settled in the year 1859, by the case of Chasemore *v.* Richards, 7 House of Lords Cases, 349. The facts of that case were very interesting, and it would add to the interest to call to mind the locality and the parties to that famous litigation. The plaintiff was the occupier of an ancient mill on the River Wandle, and for more than sixty years he and the preceding occupiers of the mill had used and enjoyed as of right the flow of the river for the purpose of working the mill. The defendant represented the members of the Local Board of Health of Croydon (as the Local Authority was then styled), who, for the purposes of supplying the town of Croydon with water, sank a well to the depth of 74 feet in their own land in the town of Croydon, and about a quarter of a mile from the River Wandle, and pumped up large quantities of water from their well. By means of the well and the pumping the Local Board of Health diverted, abstracted, and intercepted underground water (but underground water only) that otherwise would have flowed and so found its way into the River Wandle, and so to the plaintiff's mill. The quantity so diverted, abstracted, and intercepted was sufficient to be of sensible value towards the working of the plaintiff's mill. The water so diverted was underground water, flowing in no defined channel, but percolating or oozing through the soil more or less, according to the quantity of rain that might chance to fall. The judgment of the House of Lords was unanimous. They held that the principles which regulate the rights of owners of land in respect to water flowing in known and defined channels, whether upon or below the surface of the ground, do not apply to underground water which percolates through the strata in no known channels.

"The right to running water," said Lord Cranworth, in the course of his judgment (p. 379), "has always been properly described as a natural right, just like the right to the air we breathe; they are the gifts of nature, and no one has a right to appropriate them. There is no difficulty in enforcing that right, because running water is something visible, and no one can interrupt it without knowing whether he does or does not do injury to those who are above or below him. But if the doctrine could be applied to water merely percolating, as it is said, through the soil and eventually reaching some stream, it would always be a matter that would require the evidence of scientific men to state whether or not there had been interruption, and whether or not there had been injury. It is a process of nature not apparent, and therefore such percolating water has not received the protection which water running in a natural channel on the surface has always received."

Of the judicial decisions prior to the case of Chasemore *v.* Richards the author referred to two. The first was the case of Acton *v.* Blundell (1843), 12 M. and W., 324. The other case was that of Dickinson *v.* Grand Junction Canal Company (1852), 7 Exch., 282.

Proceeding, he said an owner of land had an unqualified right to drain it for agricultural purposes in order to get rid of mere surface water, that supply of water being casual, and its flow following no regular or defined course. Therefore, a neighbouring proprietor could not complain that he was thereby deprived of such water which otherwise would have come to his land (Rawstron *v.* Taylor (1855), 11 Exch., 369. This case was soon followed by that of Broadbent *v.* Ramsbotham, in the same Court (1856), 11 Exch., 602, which decided that a landowner had a right to appropriate surface water which flows over his land in no definite channel, although the water was thereby prevented from reaching a watercourse which it previously supplied, and which had for more than fifty years worked the plaintiff's mill. The principles laid down in the case of Chasemore *v.* Richards had never been shaken or departed from. In every case that had arisen since then the difficulty had been not whether the decision of Chasemore *v.* Richards was right, but rather in its application to the facts of the particular case. The author then examined the decisions in the following cases to illustrate this—viz.: Dudden *v.* Clutton Union (1857), 1 H. and N., 627; Reg. *v.* Metropolitan Board of Works (1863), 3 B. and S., 710; Grand Junction Canal Company *v.* Shugar (1871), L.R. 6, Ch. 483; Ballacorkish Silver, Lead, and Copper Mining Company *v.* Harrison (1873), L.R. 5, P.C. 49; Bunting *v.* Hicks (1894), 70, L.T. 445; Corporation of Bradford *v.* Pickles (1895), A.C. 587; and the case of Mostyn *v.* Atherton (1899), 2 Ch. 360. He then dealt with the question: "What is a known and defined channel?" and the case of an underground channel held to be "defined," but not therefore "known," citing two Irish cases, one illustrating what might be considered as a known or defined underground channel (the case of Ewart *v.* Belfast Poor Law Guardians (1881), 9 L.R., Ir., 172); and the other the case of Black *v.* Ballymena Township Commissioners (1886), 17 L.R., Ir. 459. (Case of an underground channel both "defined" and "known.") He then dealt with the questions: "What is a stream?" (referring to the case of McNab *v.* Robertson (1897), A.C., 129, in the House of Lords); "Fouling neighbouring wells" (dealing with Womersley *v.* Church (1867), 17 L.T., N.S., 190; Ballard *v.* Tomlinson (1885), 29 Ch.D., 115; and King *v.* Oxford Co-operation Society (1884), 51 L.T., 94).

On the question of right to support by underground water, the author said it was settled by the decision of the House of Lords in Backhouse *v.* Bonomi (1861), 9 H. L. Cas., 503, that an owner of land has a right at common law to support from the adjacent and subjacent soil. This right does uot depend upon prescription, but is an inherent right in the property. That being so, the question arose whether an owner of land has any such right at common law to the support of underground water. The Court of Exchequer decided that there was no such common law right of support, and the Court of Exchequer Chamber, on appeal, affirmed that decision. Popplewell *v.* Hodkinson (1869), L.R., 4 Ex., 248. In view of later decisions, it becomes desirable to examine the facts of this case. The defendants had made excavations to a great depth, for the purpose of the foundation for a church about to be built on wet and spongy land. The consequence was to let down certain cottages of the plaintiff, built about two years previously on adjoining land of the same character. Before erecting his cottages, the plaintiff had done nothing with the land, either by draining or otherwise, to make it more suitable to bear the weight of the cottages. By the excavation the plaintiff's land was drained and it subsided, and the cottages were cracked and injured. The land would have subsided even if no buildings had been erected on it. The judges who heard the case were Lord Chief Justice Cockburn and Justices Keating, Lush, Hannen, and Brett. The judgment of the Court of Exchequer Chamber was delivered by Cockburn, L.C.J. He said:—

"We are all of opinion that the judgment of the court below ought to be affirmed. Although there is no doubt that a man has no right to withdraw from his neighbour the support of adjacent soil, there is nothing at common law to prevent his draining that soil, if for any reason it becomes necessary or convenient for him to do so."

It may be added that a point was made in the course of the case that the land on which the excavation was made and the land of the plaintiff originally belonged to the same owner, and that he conveyed both in 1835 for building purposes subject to a chief rent. The purchaser in 1864 disposed of the plaintiff's portion for similar purposes, and the various conveyances contained covenants on the part of the grantees respectively to build a sufficient number of messuages or dwelling-houses to secure the rent reserved. Lord Chief Justice Cockburn on this point said:—

"Although it is true that the plaintiff's land and the land which has been drained once had a common owner, and although the plaintiff's land was, in a certain sense, conveyed to him for building purposes, at all events so far as the stipulation to build to secure due payment of the perpetual rent-charge goes, yet there is nothing to warrant the inference that there was an implied condition in the grant to prevent the defendant from doing with the adjacent land what was really incidental to its ordinary use, namely, draining it in order to render it more capable of being adapted to building purposes."

In an earlier case in the House of Lords, namely, Elliot *v.* North-Eastern Railway Company (1863), 10 H.L. Cas., 333, it had been decided that a railway company who had purchased a piece of land for the construction of their line and a railway bridge were not entitled to the additional support furnished by the water in a drowned mine. The decision in the case of Popplewell *v.* Hodkinson was very much discussed in the later case of Shelfer *v.* City of London Electric Lighting Company and Meux's Brewery Company *v.* City of London Electric Lighting Company (1895), 1 Ch., 288. The plaintiffs in these actions were respectively the owners and the tenant of a public-house called the Waterman's Arms, situated at Bankside, on the River Thames. The defendants, in 1891, acquired land adjacent but not contiguous to the Waterman's Arms, and situate on the western side thereof, and they erected on the land so acquired sheds, engine-houses, a shaft, and all the buildings and machinery necessary for forming a large central station for the purpose of supplying electric light over a considerable area. Foundations for the works were sunk from 25 to 30 feet below the surface of the ground. The plaintiffs complained of vibration and noise and a crack in the wall which extended through two stories, and was in some places two inches in width; and a hearthstone was also cracked. The defendants contended if there had been subsidence it was due to the abstraction of water owing to the excavations which they had made, and they contended that there was no right of action for diminution of support by abstraction of subterranean water, and they relied on Popplewell *v.* Hodkinson (p. 291). In reply, it was argued for the plaintiffs that Popplewell *v.* Hodkinson, though an authority as regards natural support, had nothing to do with easement or grant, which was what the plaintiffs relied upon, and Mr. Justice Kekewich, in deciding the point, said (p. 301):—

"The case cited on this point is Popplewell *v.* Hodkinson; but, as was pointed out by Mr. Warmington, that case does not depend on grant. Here I have a case of grant—that is to say, I have a case of a statutory right by a prescription equivalent to grant—and if the defendants, being the adjoining owners, have deprived Meux's Brewery Company of their support, the Brewery Company can sue them on that ground, notwithstanding, as it seems to me, that they have withdrawn that support by withdrawing the water in the soil. There is no right of action against them for withdrawing the water, which is only percolating through the soil, and does not run through a definite channel. Meux's Brewery Company could not claim on that ground. But if by reason of doing that which is lawful, that is to say, withdrawing the water, the defendants have done that which is unlawful, withdrawn the support, then the right of action seems to follow."

Justice Kekewich in the result decided that what the defendants had done amounted to a nuisance at common law, but he refused an injunction, thus leaving the plaintiffs to their claim for damages. The case ultimately went to the Court of Appeal, and there the sole question was whether or not there should be an injunction, which they granted. Nothing turned upon the question of support.

Though you may abstract underground percolating water from your neighbour's land in the way before indicated, an important qualification arises where you cannot do this without taking along with the water, soil, such as running silt or sand, if you thereby cause your neighbour's land to subside. This point arose in the case of Jordeson *v.* Sutton, Southcoates, and Drypool Gas Company, (1899), 2 Ch., 217. The defendants in this case were a gas company duly authorised by a special Act to erect on certain lands, shown on the deposited plan and described in the schedule, gasholders and other works for the manufacture and storage of gas. Under these powers they proceeded to excavate the land in question for the purpose of erecting the gasholder. In doing so they penetrated a large and extensive stratum of what is called "running silt," consisting of fine sand or silt and stagnant water, the expression "running" merely indicating that if the stratum was cut into, the silt would run through the opening made. In their natural and undisturbed state the component parts of the stratum were uniform throughout;

there was no sediment of silt at the bottom, and the water was found at all parts of the stratum. This stratum was well known to persons acquainted with the geological structure of the earth at Hull, and was, it appeared, a constant source of trouble to all who had to make deep excavations into it for building and other purposes. It extended for some miles both in length and breadth; it was some 6 ft. in thickness and commenced some 22 ft. below the surface of the land on which the defendants' works and the plaintiff's houses stood. The boundary between the plaintiff's land and the defendants' land was about 6 ft. from the excavation. The plaintiff's houses were 7 to 12 ft. from the boundary. The defendants excavated to a depth of 37 ft. from the surface. They took the precautionary measure of constructing a temporary barricade to seal up the stratum and prevent the silt from falling in. The excavation was kept dry by frequent pumping, the effect of which was to cause large quantities of water, together with some silt from the stratum under the plaintiff's land, to ooze through the interstices in the barricade into the excavation. This water again had to be got rid of by pumping, some of the silt coming away with it in the process. It was not alleged that the plaintiff's houses by their weight caused the land to subside more than it would have done without them. As to the consistency of the stratum in question, the evidence went to show that the quantity of water in it varied from time to time according to the rainfall, the proportion of water to silt or sand varying, according to different witnesses, from one-tenth of water to nine-tenths of silt, or from one-fifth of water to four-fifths of silt, all the witnesses agreeing that the silt always greatly preponderated over the water. In draining their excavation the defendants withdrew a large quantity of the running silt from under the plaintiff's land, and thus caused a subsidence of the surface with consequent structural injury to his houses. There were two points decided by the Court of Appeal in this case which it is desirable to keep quite distinct for our present purpose. The first point I will deal with at once, and it is this: The defendants' special Act incorporated, as is usual, the Gasworks Clauses Acts, 1847 and 1871. Both of these Acts contain a nuisance clause providing that "Nothing in this or the special Act contained shall prevent the undertakers from being liable to an indictment for nuisance or to any other legal proceeding to which they may be liable in consequence of making or supplying gas." The Court of Appeal decided that the works of the defendants constituted a nuisance within the meaning of those Acts, and that "nuisance" included nuisance to private individuals as well as nuisance to the public. The second point decided is, however, a more important one for our present occasion. A majority of the three judges (Lindley, M.R., and Rigby, L.J.) decided that the plaintiff's land was supported, not by a stratum of water, but by a bed of wet sand or running silt; and that as the defendants had caused the subsidence of the plaintiff's land by withdrawing this support, they had committed an actionable nuisance at common law entitling the plaintiff to damages. They therefore held that the decision in Popplewell *v.* Hodkinson was inapplicable as dealing only with support by water. Vaughan Williams, L.J., upon his view of the facts, held that the subsidence had been caused by the withdrawal of subterranean water support, and therefore that Popplewell *v.* Hodkinson applied. The difference between the judges seemed to be upon the question of fact rather than upon any question of law. In other words, whether what was withdrawn was in fact land support or water support. . . .

The author then dealt with: "Doubts as to the Extent of the Decision in Popplewell *v.* Hodkinson," and "Can a Right to Support by Underground Water be Acquired by Twenty Years' Prescription?"

It is to be borne in mind, he said, that the decision in the case of Popplewell *v.* Hodkinson, though resting on the high authority of the Exchequer Chamber, is not a decision of the highest tribunal. The doubts which have been suggested by the judges in regard to it are of two kinds. In the first place, it is hinted that the whole question whether there is any right of support from underground percolating water upon facts such as existed in that case may require reconsideration. In the second place, a new question is suggested, viz., whether such a right may not be acquired by grant expressed or implied. A case of the latter kind was attempted to be made out in Popplewell *v.* Hodkinson, but failed on the facts. In Shelfer's case, a case of prescription under 2 and 3 Wm. IV., c. 71, s. 3, was set up on the principle of Dalton *v.* Angus (1881) 6 App. Cas., 740. In the latter case the House of Lords decided that a right to lateral support from adjoining land can be acquired by twenty years' uninterrupted enjoyment for a building proved to have been newly erected (or altered so as to increase the lateral pressure) at the beginning of that time, provided that the enjoyment is peaceable and without deception or concealment, and so open that it must be known that some support is being enjoyed by the building. The enjoyment must, in legal phraseology, have been *nec per vim, nec clam, nec precario* (6 App. Cas., at p. 796). Lord Selborne, L.C., there, after quoting these words, says: "All these conditions are capable, in my judgment, of being fulfilled as to the right of support to buildings." It is a coming question whether they are capable of being fulfilled as to support by underground water. Kekewich, J., in Shelfer's case, decided in favour of a right of support founded upon the statutory prescription which presumes a grant. The remarks of at least one of the judges in Jordeson's case would seem to tend in the same direction, though all of the judges reserved their judgment on the point. What is to be the upshot time must soon determine. The consequence of a decision by the House of Lords upholding a prescriptive right after twenty years' enjoyment must have a vast and far-reaching effect, and must seriously affect building operations where underground water is likely to be met with. Jordeson's case was taken by appeal to the House of Lords, and came on for argument a few weeks ago. After the arguments had proceeded for some time the parties came to terms. We are therefore deprived for the time of the advantage of knowing the views of their Lordships upon the interesting questions discussed in the Court of Appeal.

The last point dealt with was in regard to the *locus standi* of landowners in opposing Bills affecting underground waters.

A discussion on the paper then took place, in which the following gentlemen joined:—Messrs. J. Rickards (who proposed a vote of thanks to the lecturer), A. Penn (who seconded), and Jos. Lucas, J. Burstau, Wm. Woodward, and Thos. Blashill.

The vote of thanks having been agreed to, the meeting terminated.

Country Meeting at Leeds.—It has been decided, on the invitation of the Yorkshire Provincial Committee, to hold the next County Meeting at Leeds, on April 25 and 26. The first day will be devoted to papers and discussions, with a dinner in the evening; the second day to excursions to various places of interest in Leeds and its neighbourhood.

DOULTON WARE FOR THE PARIS EXHIBITION.

THE exhibits prepared by Messrs. Doulton & Co. for the Paris Exhibition are on view at their show-rooms on the Albert Embankment. These productions will be housed in a "pavilion" some 40 ft. in diameter, composed of stoneware with a semi-glazed surface of "Carrara" enamel. The most noticeable internal decoration consists of three large panels representing the achievements of Sir Galahad from Malory's "King Arthur," painted by Mr. J. H. McLennan from designs by Mr. A. E. Pearce. The method of execution has been named by the manufacturers, "Vitreous Fresco." The painting is made upon terra-cotta slabs, which fire without a high glaze; gold is also "fired on" and burnished afterwards. In fact, it resembles a fresco painting in effect, but, unlike fresco painting, it is a permanent decoration, and can be washed.

The design and colour in these particular panels is good and rich. We only hope that, with the adoption of these modern permanent means of colour decoration, every care will be taken to procure work done by capable artists who know what decoration means.

The first show-case contains the Doulton stoneware, the original production of the firm; they say that after many years' experience the risks in producing this stoneware have by no means lessened; the firing still has to be carried through in large open kilns, liable to various conditions, so that effects and combinations of colour being prepared for, a successful result is still a matter of chance. The present exhibition shows a number of new colours found and introduced for the first time, also a departure in the method of outlining the designs; the incised line has been discarded for a freely-drawn brush outline, which has a pleasanter effect; in the matter of firing it presents difficulties—the "incised" line, hard as it was in effect, held the colour well during firing.

The most important innovation is that under the name of "Stoneware Polychrome," this is majolica painting carried out on a stoneware basis, which will prove a permanent medium for external decoration. Majolica, as carried out by Della Robbia and other mediæval potters, does not admit of being fired to a degree of hardness suitable for exterior work in the climate of English cities. Messrs. Doulton's experiment consists of a stoneware body and an enamel covering which can be fired at the same heat as the body itself, and in the same kilns. Painting fused at such an intense heat is not likely to be affected by the acids of city atmospheres. A panel of the "Crucifixion" represents this method; it has been executed for the exterior of a church in Glasgow.

A large fountain and pair of enormous candelabra by Mr. Tinworth call for attention; the latter are good but we cannot say the same for the large fountain.

There is also a collection from the Burslem works in Staffordshire: too exuberant in design and colour to ever give real pleasure, they must be regarded merely for their technical excellence as a *tour de force* of the potter's art.

METROPOLITAN ASYLUMS BOARD.

THE ordinary meeting of the Managers of the Metropolitan Asylums District was held on Saturday at Spring Gardens, Sir E. Galsworthy in the chair.

Millfield Homes.—The Works Committee submitted finished drawings of Millfield homes for 100 convalescent children which the Managers proposed to erect at Rustington, near Littlehampton. The cost of the buildings, exclusive of outside work, such as roads, &c., was estimated at 17,975*l.* The estimated annual cost of working was 3,261*l.*, of which 1,708*l.* would be for the staff. The committee recommended that the plans prepared by Mr. Rowland Plumbe be adopted and forwarded to the Local Government Board for their approval. This was agreed to.

North-Western Hospital.—The Works Committee submitted a statement showing that the total cost of the electric light installation at this hospital, which was mainly carried out under the supervision of the late Committee of Management, amounted to 3,279*l.* 18s. 11d. Of this sum, only 2,000*l.* appeared to have been sanctioned by the Local Government Board, and it was, therefore, necessary for the Managers to make application to that Board for a further order for 1,279*l.* 18s. 11d. They therefore recommended that application be made to the Local Government Board for an order authorising the expenditure of this sum. The following details were given:—Vaughan & Brown's contract, 1,246*l.* 9s. 8d.; Fowler, Lancaster, & Co.'s contract, 1,060*l.*; Scott, Anderson, & Beit's contract, 384*l.*; and charges by Professor Ayrton, engineer; Pennington & Son, architects; Faraday & Son, for fittings; and McCorquodale & Co., for lithographing specifications, 598*l.* 9s. 3d. The total was 3,279*l.* 18s. 11d., of which 2,000*l.* had been sanctioned. The recommendation was adopted.

A Slight Omission.—The Children's Committee reported that at the last meeting they submitted eight tenders for the execution of alterations and additions to 16, Elm-grove, Peckham, according to a plan and specification prepared by Messrs. C. & W. Henman, and the lowest tender, viz., that of Mr. Priestman Moses, of 497, Old Kent-road, for 565*l.*, was accepted subject to satisfactory inquiries. The next lowest tender was 765*l.*, the architect's estimate being 650*l.* Subsequently Mr. Moses wrote that there had been a slight omission in the estimates which, when remedied, would increase the tender to 630*l.* The committee considered that the tender was a *bonâ fide* one and they recommended that the tender for 630*l.* be accepted. This was adopted.

Spring Cleaning.—The Hospitals Committee recommended that they be authorised to give directions for such cleaning, painting, and other work as might be considered necessary at the infectious hospitals during the coming

spring, to employ necessary temporary labour, and to purchase the materials and plant requisite for the carrying out of these works. The recommendation was adopted.

Tenders Required.—The Hospitals Committee reported that the destructor at the Gore Farm Hospital had been in use for about twelve months, and it was found that the fire-bricks forming the top of the furnaces and the brick piers next to the chimney shaft required repair. It was also desired that water should be laid on, which would necessitate the laying of 450 ft. of lead piping, and that the space where carts were unloaded should be paved with granite setts on a bed of Portland cement concrete. The estimated cost was 88*l.*, and they recommended that advertisements be issued for tenders for the execution of this work. This also was adopted.

North-Western Hospital.—The Hospital Committee submitted a statement showing that the total cost of the erection of five new pavilions and an isolation block at this hospital was 55,363*l.* 11s. 6d. Of this sum 54,805*l.* had already been sanctioned by the Local Government Board, and on the Committee's recommendation it was now resolved to request the Local Government Board to issue an order authorising the remaining 558*l.* 11s. 6d.

BOOKS RECEIVED.

HOUSES FOR THE WORKING CLASSES IN URBAN DISTRICTS. By Sydney W. Cranfield and H. Ingle Potter. (B. T. Batsford.)

HYDRAULIC RAMS; THEIR PRINCIPLE AND CONSTRUCTION. By J. Wright Clarke. (B. T. Batsford.)

HOUSE DRAINAGE AND SANITARY FITMENTS. By Gerard J. G. Jensen, C.E. (Sanitary Publishing Company.)

ART IN NEEDLEWORK: A BOOK ABOUT EMBROIDERY. By Lewis F. Day and Mary Buckle. (B. T. Batsford.)

TRIBUNAL OF APPEAL UNDER THE LONDON BUILDING ACT, 1894:

LONDON COUNTY COUNCIL AND THE BUILDING LINE.

THE Tribunal of Appeal under the London Building Act, 1894, sat at the Surveyors' Institution on Thursday, the 8th inst., to hear the appeal, adjourned from the previous sitting (reported in the *Builder*, February 24) made by Mr. Andrew Faulds against the decision of the Superintending Architect of the London County Council in fixing the general line of building on the eastern side of Brixton Hill, between Josephine-avenue and Fairmount-road. The members of the Tribunal sitting were Messrs. Arthur Cates (Chairman), A. A. Hudson, and W. J. Penfold.

Mr. Andrews, from the Solicitor's department of the London County Council, appeared on behalf of the Superintending Architect as respondent to the appeal, and Mr. W. C. Ryde, barrister (instructed by Messrs. Kingsbury & Turner), for the appellants.

The adjournment was ordered with the view to notices being served on certain parties who, under the rules of the Tribunal, were entitled to be so treated. At the same time, the members of the Tribunal expressed a hope than an amicable arrangement would, in the meantime, be come to with the London County Council.

Mr. Ryde now intimated that all the necessary notices had been served.

Mr. Andrew also stated that the matter had again engaged the attention of the Building Act Committee of the L.C.C., but no amicable arrangement had been arrived at.

On proceeding to deal with the appeal "on its merits," it was explained by Mr. Ryde that the Superintending Architect's certificate, which fixed the building line at 50 ft. from the highway, related to the frontage on Brixton-hill, extending from Josephine-avenue to Fairmount-road. The contention of the appellants was, however, that Arodene-road formed the southern boundary for the building line.

Mr. Andrews submitted that the general building line was that created by existing buildings. In the present instance there were main buildings with one story shop fronts abutting on to the pavement. The line, which need not be a mathematical but a general line, should not be drawn from Arodene-road, which had only been in existence eight years, but from the southernmost thoroughfare. Moreover, he contended that the one-storied shops were not parts of the main buildings but mere extensions.

Mr. Hudson raised the point that the Superintending architect's certificate was not a certificate within the meaning of the Act, because it did not define what was the general building line. He stated that it was "a line more than 50 ft. back," but did not define it.

Mr. Andrews said it had been the practice of the department to give a general line as existing 50 ft. from the highway, and it was always so described. The owner had a right to come within 50 ft. without question.

Mr. F. A. Powell, appellant's architect, said all the buildings between Josephine-avenue and Arodene-road were in advance of 50 ft. from the highway.

Mr. A. Faulds, the appellant, stated that the shops and houses referred to were erected twenty years ago. He did not consider it necessary, in view of this fact, to ask the Superintending architect to define a line. That was done at the request of the solicitors to the Council.

Mr. Andrews contended that the certificate should be upheld, and called Mr. F. J. Lancaster, Chief Clerk of the Superintending Architect's Department, who declared that, from his experience of thirty-three years, the general building line had not been taken from one-story erections in front of main buildings. They were, in fact, mere extensions.

Mr. Andrews, referring to a question raised as to the Rush Common Act, said he could not properly apply that Act in the present instance. The dispute was entirely as to building line

Evidence was also given by Mr. J. S. Quilter, District Surveyor, who denied that he verbally gave appellant sanction to go on with the building in question.

Several adjoining tenants—Messrs. Smith & Co., Messrs. Smart, Nash, and Hanne—appeared in support of the appeal.

In the result the Tribunal found unanimously that the Superintending Architect's certificate must go, and in announcing this the Chairman added that they were of opinion that it would have been more satisfactory had the parties agreed upon a line.

Mr. Andrews: The Council are not prepared to accept the responsibility. They leave it to the Tribunal.

The Chairman said the Tribunal dealt with the appeal on its merits, and in no way set up a precedent.

The appeal was accordingly allowed with costs, which it was agreed should be fixed at thirty guineas.

Correspondence.

To the Editor of THE BUILDER.

FIRE-RESISTING CEILINGS.

SIR,—We did not intend to refer again to this matter, but your correspondents, in their letter in your issue of the 10th inst., having taken exception to our remarks, we beg to state that we had no intention to enter into a controversy as to the relative degrees of expansion of iron and cement, but rather to state that it was well known that iron was a high conductor of heat, and when under fire does expand, uplift concrete floors, displace brickwork, &c.; and our letter should be read in its entirety, not subjected to a quotation of one sentence only.

Faraday gave the expansion of wrought iron as 1·0012575, cast iron 1·0011112, cement being 1·001435.

Experiments on which these calculations are based, we submit, are not of a very practical nature, and in their results the trials carried out by the British Fire Prevention Committee appeal more conclusively to the main body of your readers.

Those made by your correspondents in 1893 over a coke fire (which would not exceed a temperature of 790 deg.), cannot be compared with the average heat of 2,000 deg. to which temperature the wired terra cotta lathing partition we referred to was subjected. Volume of substance and extent of surface are also elements to be considered, and the velocity of cooling, other things being equal, increases with the extent of surface compared with the volume of substance. With the exposure to a great heat there is the important consideration of time under fire. No material is absolutely fireproof, and wrought iron melts at 3,980 deg.

We should be glad to attend a trial of the lathing referred to if your correspondents propose to submit their material for trial by the British Fire Prevention Committee, of which Mr. Marsland is an active member.

We have already stated that we have applied for a trial, using wired terra-cotta lathing as a centering for a fire-resisting coke breeze concrete floor and plaster ceiling, to comply with the requirements of the Building Act, Section 74.

JOHN BURGESS,
Secretary, Mural and Decorations Syndicate.

The Student's Column.

DETAILS OF STRUCTURAL IRON AND STEEL.

10.—RIVETS AND RIVETTING.

RIVETS are manufactured from round bars of iron or steel, of tough and ductile quality, and of suitable diameter. The bars are heated in a furnace, cut up into pieces of the required length, and each piece is pressed in a die, which upsets one end of the metal, so as to form a head. This part, for the purpose of distinguishing it from the "head" made in the process of rivetting, is technically described as the "tail," and the other portion of the rivet is known as the "shank." Rivet shanks are generally parallel, but sometimes they are tapered towards the point, so that they may be easily placed into the rivet holes of a perforated plate. There are many different shapes in which rivets are made, and some of the most common of these are illustrated in figs. 27 to 31. Unfortunately, no standard dimensions have yet been agreed upon with regard to the proportions of rivets, but those contained in Table XXV. may be taken as being fairly representative of good practice.

Table XXV.—Average Proportions of Rivets. (D = diameter of rivet.)

Fig. No.	Description.	Dia. of Tail.	Depth of Tail.	Dia. of Neck.	Depth of Neck.	Dia. of Point.
27	Pan-tail	(*a*) D × 1·5 (*b*) D × 1·3	D × ·67	—	—	D × ·93
28	Flat or "Cheese"-tail	D × 1·5	D × ·67	—	—	D × ·93
29	Cup or "Snap"-tail	D × 1·6	D × ·65	—	—	D × ·93
30	Do. do. with conical neck	D × 1·7	D × ·66	D × 1·125	D × ·5	D × ·93
31	Countersunk-tail	D × 1·5	D × ·66	—	—	D × ·93

In the process of rivetting, the rivet is heated to a suitable temperature and is then placed in the hole. The head is formed by hammering, aided in some cases by the use of a rivetting-set, or a rivetting machine actuated by steam, hydraulic, or pneumatic pressure may take the place of hand labour. The necessary length of shank projecting through the plates for the formation of a satisfactory head is governed by the thickness of the plates, by the diameter of the rivet, and by the method of rivetting adopted.

As the shank of the rivet is swelled out during the process of rivetting so as to completely fill the hole, it is obvious that the length of the projecting portion must be in some measure governed by the collective thickness of the plates. The diameter of the rivet is always proportioned to the thickness of the plates, and to the kind of joint made; and as a general rule the diameter of the rivet is the basis from which the length of projection is calculated. Thus in the case of counter-sunk heads the projection is equal to the diameter of the rivet, to 1¼ or 1½ times the diameter for raised heads in hand rivetting, and to 1½ or 1¾ times the diameter for similar heads in machine rivetting. Fig. 32 represents a rivet projecting through two plates and the dotted arc shows the ultimate form of the head.

In Table XXVI. the average proportions of various rivet heads are given together with references to the figures in which the completed rivets are illustrated. The rivet heads are at the top in every instance.

TABLE XXVI.—Average Proportions of Rivet Heads. (D = *diameter of rivet.*)

Fig. No.	Description.	Diameter of head.	Depth of head.
33	Conical head	D × 2	D × ·75
34	Snap head	D × 1·6	D × ·63
35	Conoidal head	D × 2	D × ·75
36	Counter-sunk head	D × 1·5	D × ·5 to ·7
38	Counter-sunk elliptical head	D × 1·5	D × ·5 within the plate D × ·25 above the plate

The conical head, illustrated in fig. 33, is made by hammering down the rivet point by the use of light hammers, and finishing the head with a rivetting-set or die.

The cup, or snap, head, shown in fig. 34, is formed by hammering down the point of the rivet, and finishing the work by the aid of a cup-shaped die, commonly called a "snap."

The conoidal head shown in fig. 35 has a

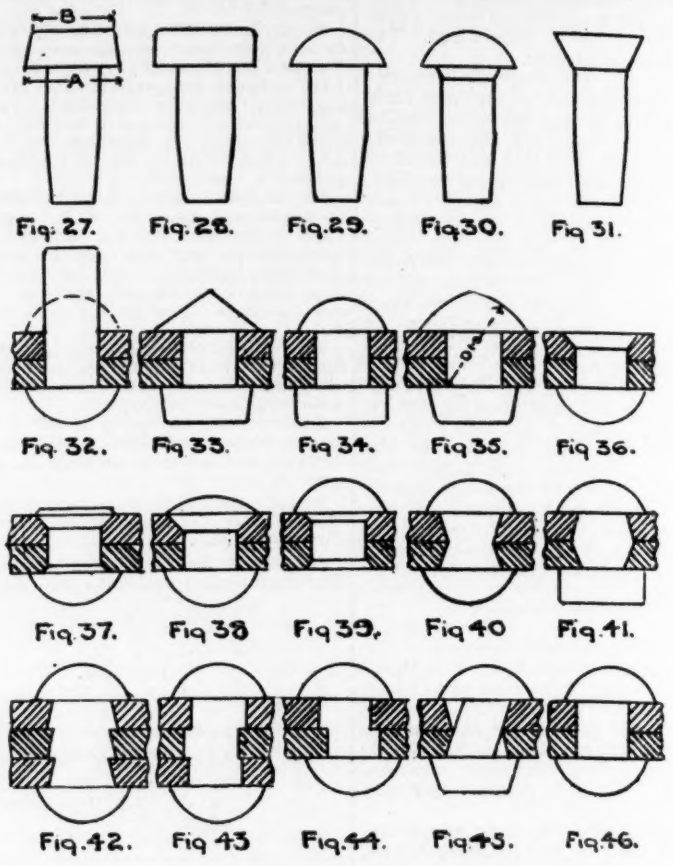
radius equal to diameter of the rivet × 1·8; but this form is now very little used.

The counter-sunk head, fig. 36, is formed by knocking down the rivet point into a conical hole, and sometimes, as shown in fig. 37, the head is finished so that it projects above the surface of the plate, in order to give an increase of strength. Another type of counter-sunk head is illustrated in fig. 38, where the height of the head above the surface of the plate equals the rivet diameter × ·25. Sometimes the plate is slightly counter-sunk in such a manner as to form a neck both at the head and tail, as in fig. 39, thereby adding to the strength of the rivet and diminishing the cutting effect of the perforated edge of the metal.

Rivetting is an operation requiring a sufficient amount of attention to various points of detail, and if these be neglected, serious diminution of strength must ensue. Therefore, it is desirable that we should briefly examine the most frequent causes of defective work. When two punched plates are to be joined, they should always be placed so that the holes come together, as in fig. 40; the holes are then completely filled by the rivet, and, as the tension due to contraction is equally distributed throughout the whole length of the hole, instead of being concentrated at the ends, the stress on the rivet head and tail is not excessive, and the configuration of the rivet is such that there is always a grip on the plates, even if the head or tail should be accidentally detached. The converse arrangement of the plates is shown in fig. 41, where the rivet takes a barrel-like shape, which is in every way undesirable.

Supposing three or more plates have to be rivetted, they should be clamped together in their proper relative positions, and drilled through at one operation so that the hole may be truly cylindrical throughout. If perforation be performed by punching, it is impossible for the hole through a series of plates to be cylindrical, because each individual hole is tapered, and if rivetted up in that state the result would be a joint similar to that depicted in fig. 42. Supposing the individual plates are punched, and afterwards drilled or rimered to size, the separate holes will be cylindrical, but it is quite possible that the collective hole may more or less resemble the pattern of that indicated in fig. 43. In either event, the rivetting would be bad, for supposing the rivet were made so hot that the hole became entirely filled during the operation of closing-up, there would be a series of sharp angles in the shank, tending to assist shearing stress. On the other hand, if the rivet were not heated sufficiently to permit of its substance being forced into all the eccentricities of the hole, a full bearing would not be obtained, and the rivet would become loosened in time, especially under the influence of live loads. Another example of defective rivetting is shown in fig. 44, where a rivet is seen filling a partly obscured or "blind" hole, formed by the imposition of two inaccurately punched plates. If a hole of the last-named kind has to be encountered in the course of hand-rivetting, it is generally the case that the space will not be completely filled, and the finished rivet will probably acquire a shape somewhat like that seen in fig. 45. A badly headed rivet, as in fig. 46, can only result from carelessness. Rivets should not be used when above a dull red heat, as they are liable to injury if worked at too high a temperature. They ought to be quickly heated in a clean fire, in which they should not be allowed to remain for too long a time. The presence of dirt, or of scale, hinders the metal from filling the hole in a proper manner. If the length projecting through the plate before closing up be insufficient, the head will be too thin, and will be liable to curl up round the edge. On the other hand, if an excess of length be left projecting, a collar will be formed round the head. This should be allowed to remain, as any attempt to cut it away may damage the plate. Care should always be taken to avoid any injury to the plate when using a rivetting-set.

In a perfect rivetted joint the various mechanical points to which we have referred must have received due attention, and the metal must entirely fill the hole, not only when the rivet is hot, but also after cooling. The latter condition is manifestly impossible, owing to the lateral contraction which must inevitably take place as the metal cools. Probably the most perfect joint possible would be one with



drilled holes in which the rivets were turned and closed quite cold. In this case, however, the benefit resulting from longitudinal contraction would be lost. This effect will be considered hereafter, in connexion with the strength of rivetted joints.

No hard and fast rule can be made as to the most suitable form of rivet for adoption in any particular case, because convenience, cost, and appearance have generally to be considered in addition to the question of strength. Conical heads are chiefly used on the fronts of steam boilers because of their neat appearance, but they are not so strong as snap heads, which are very largely used in boiler, girder, and general engineering work. Some railway engineers employ snap heads for lap joints, and counter-sunk heads for butt joints, and in ship-building practice there is a preference for counter-sunk rivets, the use of which is essential in the outer plates of a vessel. So far as comparative strength is concerned, there appears to be divergence of opinion, but the subjoined table will convey some useful though not altogether consistent information on the subject. The figures have been calculated from experiments conducted by Mr. Wildish at Pembroke Dock.

Table XXVII.—Relative Values of Rivets.

1 in. dia. in ¾ in. Plates, ¾ in. dia. in ½ in. Plates.

Description of Rivet.	1 in. Dia.		¾ in. Dia.	
	Frictional Resistance in Tons	Ratio.	Frictional Resistance in Tons.	Ratio.
Snap head and tail	6·04	1·00	4·72	·738
Conical head and pan tail	7·36	1·15	4·52	·904
Counter-sunk head and pan tail	8·55	1·33	6·25	·976
Counter-sunk head and tail ..	9·04	1·41	4·95	·773

Rivetting was formerly done entirely by hand, and the operation requires the aid of three men. The rivets are hung over a fire by means of a perforated plate, which prevents the tails from being overheated. One rivet is taken at a time and placed in the hole, the tail being kept close up to the plate by one man, with a hammer or "holder up," whilst the two other men form the head by hammering down the point, and finishing the work by the use of a die, or "snap." A lad is generally employed for the purpose of attending to the furnace, and of keeping the rivetters supplied with hot rivets. Machine-rivetting is now the rule, and hand-rivetting the exception. The older types of machine-rivetter are driven by steam, acting upon a piston, at the end of which is a plunger, arranged so as to strike a sudden blow upon the rivet. Two dies are provided, one fitting over the tail and the other over the point of the rivet, so that upon the application of the necessary force the head is formed. Pressure exerted by a steam rivetter is directly governed by the area of the piston and the pressure of the steam admitted. A few steam rivetting machines still survive, although as a class they were practically superseded some time ago by mechanical rivetters, in which the hammer is moved backwards and forwards by means of a cam or other suitable device, and the machine is driven from shafting by means of a belt. This appliance is not approved for high-class work, because pressure cannot be varied, and no ready means exist for ascertaining what force is really being exerted. Hydraulic rivetting machines have largely displaced the two forms of apparatus above mentioned, and they embody several important advantages. For instance, pressure may be gradually applied to the rivet; variations of force may be made as required; and the exact force used can always be ascertained. Portable forms of the apparatus are made, which can easily be handled and taken to almost any part of a structure where work has to be done. This adaptability is highly advantageous in constructional iron-work, and it is also deservedly popular in the fitting shop. Water pressure is supplied by a flexible pipe, and the pressure varies from 1,000 lbs. to 1,750 lbs. per square inch. Owing to the high pressure employed there is always some risk of leakage, and in outdoor work during exceptionally cold weather there is a possibility that the water may be frozen. Another drawback is to be found in the cost of the machine itself and of auxiliaries, such as pumps and accumulators.

Pneumatic rivetters constitute the most recent application of power to the needs of the structural engineer. This appliance is one which, like many other ingenious inventions, has been introduced into this country from the United States, and it appears to be regarded with a considerable amount of favour, especially so far as the more portable forms are concerned. Compressed air is taken from a receiver fed by a pump, and is led by means of a flexible pipe to the rivetting machine, where it acts directly upon the piston. The piston-

rod is connected with the plunger by a series of levers arranged in such a manner that the force exerted upon the ram continually increases during the progress of each stroke. As the pressure required is only 100 lbs. to 125 lbs. per square inch, very little inconvenience is experienced in connexion with the conveyance of air from the receiver to the machine, and there can be no risk of freezing. An advantage is to be found in the fact that the first cost of the apparatus is considerably less than that of a hydraulic rivetter.

Machine rivetting is in every way preferable to hand rivetting. One reason, which appeals very forcibly to contractors, is to be found in the fact that rivets costing 3*l.* 15s. per thousand, when put in by hand will not average more than about 17s. 6d. when the work is done by a machine. Another advantage of much more importance is to be found in the greater strength of machine rivetting, resulting from the heavier and more equable pressure obtained. The plates are therefore brought into closer contact, and a larger quantity of the metal composing the rivet shank is pressed into the hole. Further, if it should be thought desirable, the pressure upon the newly-formed rivet head may be sustained, so that the plates may be pressed together during the cooling of the metal; consequently, the grip of a rivet upon the plates is maintained without the risk of drawing apart whilst the rivet is still hot. Closely rivetted plates offer considerable resistance to the penetration of moisture which would cause corrosion, and to buckling between the rivets under longitudinal compressive stress. Moreover, the friction produced very often relieves the rivets from shearing stress.

Experiments made by Messrs. Greig and Eyth are indicative of differences in the strength and other characteristics of rivetting done by various machines. For instance, they shew that "the plate, especially if soft, is much less injured by hydraulic rivetting, and that this method has therefore a decided advantage where the plate is the weaker part; but that the rivet itself is stronger when put in by the steam-rivetter, owing probably to the greater compactness of the rivet material obtained by the sudden shock." The following table embodies the results of some experiments as to the relations between pressure applied and the shearing resistance of the rivets put in by various machines.

Table XXVII.—Rivetting by Various Machines. (*Steel rivets* ⅞ *in. diameter,* 1⅛ *in. drilled holes.*)

Kind of Machine.	Pressure on rivet.	Shearing resistance, per sq. in.
Steam rivetter	37 tons.	25·74 tons.
Power rivetter (light)..	31 ,,	22·5 ,,
,, ,, (heavy).	52 ,,	23·76 ,,
Hydraulic rivetter (portable)	20 ,,	22·78 ,,
Hydraulic rivetter (stationary)	39 ,,	23·80 ,,

Speaking in general terms it may be said that the shearing strength of iron and steel rivets is about ·75 per cent., of their tensile strength. The mode of perforation adopted affects the strength of the rivets, but experiments have hitherto afforded results so much at variance one with another, that no definite ratio can be formulated. The tensile strength of rivets may suffer reduction in consequence of heating and working; thus a diminution of 12 per cent. frequently occurs in the case of iron rivets, and of 24 per cent. in that of steel. On the other hand, if the rivets be carefully heated, and worked at a comparatively low temperature, their tensile strength should not be diminished, and may be increased by the effect of mechanical treatment.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS AND COMPETITIONS.—The Council of the Institute urgently request members of the Institute who have been asked to act as assessors subsequent to the conditions of the competition having been drawn, to obtain a copy of the conditions and consider their conformity with the "suggestions" issued by the Royal Institute, and also to notify the Secretary, Royal Institute of British Architects, that they have been asked to act.

STATUE OF SIR BENJAMIN DOBSON, BOLTON.—A statue of Sir Benjamin Dobson has been placed in Victoria-square, Bolton; it was unveiled on the 17th ult. The statue was the work of Mr. John Cassidy, of Manchester.

GENERAL BUILDING NEWS.

RESTORATION OF CHURCH, EAST CLANDON, SURREY.—The restoration of the old village church, built in the thirteenth century, and which has been for many years in a very dilapidated condition, is now being carried out under the direction of the Diocesan Architect, Mr. T. G. Jackson, R.A. The principal features of the work now commenced will be to restore to its original size the transept on the north side of the nave, which was converted into a family pew at the end of the last century, with an apsidal back and ceiling of lath and plaster, reducing it to half its dimensions. The restoration of this transept, which has been used of late years as a vestry, necessitates the construction of a new vestry, which will be placed on the north side of the tower, leading out of the transept referred to, thus continuing the line of the exterior wall of the transept to the end of the tower; by this means the fine old sloping roof on the north side of the church will be preserved and increased. Under the vestry a chamber is being constructed to heat the church with hot air. The tower is to be strengthened with oak beams and supports. The roofs, walls, and windows will also receive attention, and the present inconvenient seats will be removed and replaced by oak seats if the funds permit. The total cost of the works now commenced and contemplated will amount to fully 1,700*l.* The works are being carried out by Messrs. Holden, of Cranleigh.

ADDITIONS TO CHURCH SCHOOLS, BRISTOL.—A new class-room has been added to St. Matthias' Church Schools, Bristol. The architect was Mr. C. A. Rowley, of Bristol, and Messrs. Cowlin & Sons were the contractors.

CATHOLIC SCHOOL, ABERDEEN.—New Catholic schools are to be built on the east side of Summer-street from plans prepared by Mr. R. G. Wilson, architect. The main entrance will be divided into two—one for girls and the other for boys. The main entrance will be approached by a flight of stone steps. The projecting wing in front containing the staircases leading to the upper floors will be lighted by a double arched window, with moulded sill and jambs, and boldly projecting voussoirs. On each side will be two gablets with moulded spur stones. The main building, when completed, will measure 54 ft. 6 in. by 30 ft., in addition to which the wing containing the main staircases will project 25 ft. in front of the principal structure. The frontage to Summer-street will be 82 ft. The depth of the site on the side next Union-row will be 87 ft., and on the side next Union-wynd 150 ft. The uniform width of site is 66 ft. 6 in. On the basement floor there will be a gymnasium measuring about 50 ft. by 26 ft., also a mistress's room. The ground floor will contain an infant classroom, 26 ft. by 25 ft., and a classroom for Standards I. and II. of the same extent. These classrooms will be divided from each other by a glass partition. On the first floor will be classrooms for Standards III., IV., V., and VI. On the left of the main entrance lobby will be situated the master's room, and cloakrooms will be provided off the main staircase. There will also be lavatory, heating, and sanitary arrangements, all of the most improved type. Accommodation will be provided for upwards of 300 pupils.

HOUSE-BUILDING IN SHEFFIELD.—In view of the difficulty which now exists in Sheffield of getting houses, especially of a working-class character, some figures as to the rate of house-building are of interest. Every year sees an increase in the rapidity with which new property springs up within the boundaries of the city. In 1897 1,443 houses were certified by the City Surveyor as fit for habitation; in 1898 2,175 were so certified; and last year the number was no less than 2,650. The number of houses sanctioned for erection on the plans passed during 1899 was 3,618, as compared with 3,902 in 1898, and 2,338 in 1897. Between 1864 and the end of December last, over 34,000 houses were erected in the City according to the Corporation's by-laws, and at the present moment the building of cottage property is going on extensively in all the suburbs. The plans passed by the Corporation Sub-committee since January 1, 1900, include proposals for 434 new houses. The fact that in spite of this rapid growth of the city, working-class people have considerable difficulty in getting suitable houses, affords an argument for municipal house-building. It is quite clear that at the present moment a large number of people are living in insanitary dwellings, for the simple reason that there are no others to be had, the supply of newer and better houses not having kept pace with the demand. Had the important question of municipal house-building been pushed forward, nationally and locally, more quickly than it has been, the state of things to-day might have been much better; as it is, additional difficulties are thrown in the way of the Corporation in their plans for dealing with insanitary property, which must now be very cautiously pushed forward. In several cities in the United Kingdom, where the housing of the poor problem has been attacked, considerable temporary harm has been done by abolishing slum property before providing adequate alternative accommodation elsewhere. This has intensified the evils of over-crowding, and the same thing would evidently happen in Sheffield if undue haste were manifested. With our present tramway facilities bringing the healthy suburbs of the city within easy time-distance of the works and places of business, there is no excuse for the continuance of overcrowded or unhealthy dwellings. —*Sheffield Independent.*

THE LONDON HOSPITAL. — We learn that the governors of the hospital, to which some additions have lately been made from Mr. Rowland Plumbe's plans and designs, announced at their last quarterly court their intention to expend a total sum of 250,000*l.* upon improvements during the next five years. They propose to devote 60,000*l.* to a new front block, 20,000*l.* to alterations of the interior, and 7,000*l.* to a children's ward, and to erect a new out-patients' department (60,000*l.*), Jews' ward (10,000*l.*), laundry (15,000*l.*), isolation block (30,000*l.*), and post-mortem and pathological department (15,000*l.*).

NEW ACUTE HOSPITAL AT WAKEFIELD.—The acute hospital in connexion with the West Riding Asylum at Wakefield, including the grounds, covers about seven acres, and the buildings have cost about 90,000*l.* The buildings are in several blocks, the central block being the administrative department, with a block on the Stanley Hall side for 100 female patients, and a block on the opposite side for an equal number of male patients. There is also laboratory and other accommodation for the medical staff, nurses, and attendants, culinary departments, store-rooms, &c. The whole of the establishment is lighted by electricity and heated by hot air. The work has been carried out by Mr. Isaac Gould, of Hunslet, Leeds, and the furniture, &c., has been supplied by Messrs. Pratt, of Bradford. The plans of the building were prepared by Mr. V. Edwards, the West Riding Architect and Surveyor.

NEW BUILDINGS IN BIRMINGHAM.—The Building Surveyor of the city reports that during the year 1899 there was a slight falling off in the number of houses for which plans were submitted, but in 1898 plans were approved for several estates the buildings on which are still in course of erection, and when allowance is made for this it may still be assumed that there is a progressive increase in the erection of houses. The growth of house building is shown by the fact that in the year ended December 31, 1896, plans were submitted for 1,852 houses; 1897, 1,836; 1898, 2,308; 1899, 2,145. The upward bound of house building has been greatest in the Saltley district (in the Washwood Heath neighbourhood), whilst Sparkbrook, Rotton Park, and Winson Green also show large increases. The following is a comparison of the number of houses for which plans have been submitted with the number of all other kinds of buildings during the year. Houses and shops 2,145, business premises 35, warehouses and shopping 220, miscellaneous 158, alterations and additions 382, churches 1, chapels 4, schools 1—2,946. During the year 600 "dangerous" notices and 250 "contravention" notices have been served and dealt with.

BUILDING IN LIVERPOOL.—The Report of the Liverpool Building Surveyor (Mr. William Goldstraw) on the work of his department during last year, states that the number of houses erected showed an increase over the preceding year, and that the increase is progressive. The number built was 2,358, compared with 1,977 in 1898, 1,656 in 1897, 1,199 in 1896, and 247 in 1895, or prior to the extension of the city. Of the 2,358, 777 were erected in Wavertree, 532 in West Derby, 474 in Walton, 335 in the old city, and 240 in Toxteth Park. The total number of houses erected during 1895 to 1899 was 7,745, of which 1,850 were in Wavertree, 938 in West Derby, 1,690 in Walton, 2,111 in the old city, and 1,156 in Toxteth Park. The high figures for the old city, it may be mentioned, were chiefly owing to the building up of an estate on the north side of Kensington; but that rather abnormal rate of growth in the old city, which was highest in 1897, had now decreased to the usual average. As to the growth of the city as a whole, the increase since 1895 had raised the number of houses erected in 1899 (the fourth complete year after the extension) to nearly double the number of those erected in 1896 —the first year after the extension. In this connexion it is pointed out that, at the time of the enlargement of the boundaries, a rather inadequate addition was made to the staff of the building surveyor's department; and that fact was referred to in last year's Report as being likely to form a reason for some increase in the staff. No alteration in that respect had yet been made; but one district surveyor had supervised the erection of 1,117 houses (besides other buildings) during the year in such a scattered area as that of the combined districts of Toxteth Park and Wavertree. With regard to the growth of the city in respect of buildings in general, it may be noted that, in addition to the houses, there were erected 123 new workshops, stables, and minor buildings, compared with 149 in 1898, 138 in 1897, and 82 in 1896; 56 new public buildings, offices, and manufactories, as against 34 in 1898, 44 in 1897, and 55 in 1896; 4 new warehouses, and 634 additions and alterations, compared with 753 in 1898, 759 in 1897, and 663 in 1896. In reference to the buildings taken down, these included 781 dwelling houses, of which 522 were demolished owing to the action of the Insanitary Property Committee, the figures for the preceding years being 810 in 1898, 738 in 1897, 747 in 1896. Seven workshops, stables, &c., and six public buildings, offices, and manufactories were also taken down. It had been found necessary during the past year to send out 700 "dangerous" notices more than those sent

out last year. The large number of 2661 such notices in 1899 had involved a large amount of troublesome work on the part of the four district surveyors in the old city. The number of notices as to defaults in new building work had not increased, although the amount of new work during the year had grown considerably. The number of plans dealt with by the Building Plans Sub (Health) Committee was 798, and although this only showed an increase of 39 over 1898, the actual number of houses shown on such plans was 2,576, as against 2,047 in 1898.

ELECTRIC LIGHTING STATION, YORK.—The new electric lighting station at Foss Islands, York, was opened on the 26th ult. Professor Kennedy was the engineer, and Messrs. Parker & Sharp were the contractors.

ALEXANDRA COLLEGE, DUBLIN.—The building operations which have been in progress for the last twelve months at the Alexandra College are now practically complete. A portion of the college premises adjoining the hall has been remodelled and brought into harmony with the rest. It is intended in the near future, it is stated, to still further extend this treatment of the exterior, so as to mark clearly the limits of the college property. The council were anxious to preserve the old "Jellicoe Hall," so the outer walls were, as far as possible, retained, and the hall enlarged to meet the requirements of an increased, and rapidly increasing, roll of students by taking down the narrow building which connected the old octagonal structure with the college proper, and extending the hall backwards towards the college uncontracted as it formerly was. The additional accommodation gained by these alterations may be thus summarised:—Enlarged Jellicoe Hall and gymnasium under it; a cloak-room; a series of classrooms over the Jellicoe Hall; and, over these again, instrumental and vocal music rooms; improvement of the residence house by the enlargement of the dining-hall, and the addition of several bedrooms. The increased size of the Jellicoe Hall demanded a more imposing approach than the old hall formerly had, and the architect has endeavoured to make the entrance-hall and staircase to the Jellicoe Hall a feature in his design. A system of exhaust ventilation, carried up from the ceiling to the lofty, copper-covered flèche on the roof, has been provided, and Messrs. Maguire & Gatchell are responsible for the heating of the college by the American radiator system. The building work has been carried out by Messrs. Samuel H. Bolton & Sons from the design and under the superintendence of Mr. R. Caulfeild Orpen.

TOWN HALL, WEST KILBRIDE, AYRSHIRE.—The new Town Hall for West Kilbride, erected on a site in Ritchie-street, was opened on the 16th ult. The large hall will accommodate 450 people. Mr. A. N. Paterson, of Glasgow, was the architect.

GOLF CLUB-HOUSE, BOGSIDE, LANARK.—A club-house for the Irvine Golf Club has been erected at Bogside, from the designs of Mr. Allan Stevenson, architect, Ayr.

POST-OFFICE, ALDERSHOT.—A new post-office is to be built at the corner of Station and Victoria roads, Aldershot, from a design by Mr. W. T. Oldrieve, surveyor, of H.M. Office of Works.

BUILDING IN BIRMINGHAM.—The Birmingham Central Mission are about to erect a new Central Hall in Corporation-street. The hall will be on the first floor of the building, and will accommodate upwards of 2,500 persons. Fifteen shops, a sale-room, and a warehouse, will occupy the ground floor. The cost will be about 60,000*l.*——The site on which St. Peter's Church, Dale End, now stands has been secured for the erection of premises for the Y.M.C.A. The new buildings will have a frontage to Dale End of 98 ft. and a depth of 176 ft. ——The Temperance Hall in Temple-street is to be practically rebuilt, and an additional assembly hall will be provided on the ground floor. The architects in each case are Messrs. Ewen & J. A. Harper, of Colmore-row.

WORKMEN'S DWELLINGS, EDMONTON.—Colonel W. R. Slake, R.E., a Local Government Board Inspector, held an inquiry at the Town Hall, Edmonton, recently, into an application of the District Council for sanction to borrow 9,680*l.* for the purchase of eighteen acres of land between Brettenham-road, Felixstowe-road, and the Great Eastern Railway, as a site for workmen's dwellings and a depôt. Mr. G. E. Eachus, the engineer, stated that sixteen of the acres would be set aside for the dwellings, the other two being used for a depôt.

WATER PUMPING STATION, FARNHAM, SURREY.—The new pumping station of the Farnham Water Company, situated in Darvill's-lane, Farnham, was opened on the 13th ult. The machinery was supplied by the Coalbrookdale Company, Limited. Mr. J. White Lewis was the engineer of the whole scheme, the building having been erected by Mr. J. Kimber, of Farnham.

HOSPITAL EXTENSIONS, BURNLEY.—At a recent meeting of the Burnley Hospital Board, Mr. Hutton, the architect, submitted plans of two additional fever pavilions and proposed extension to administration block, and the clerk was directed to make application to the Local Government Board for sanction to borrow 18,000*l.* to carry out the work.

PROPOSED ISOLATION HOSPITAL, SOUTHGATE.—Mr. R. Deane Sweeting, Local Government Board Inspector, recently held an inquiry at the District Council Offices, Palmer's Green, respecting an application by the Southgate District Council for sanction to borrow 8,700*l.* for the purpose of erecting and furnishing an infectious diseases hospital at Tile Kiln-lane, Southgate. Mr. C. G. Lawson, the Surveyor, submitted plans and estimate of the costs of the several buildings, the total of which was 6,550*l.*

SANITARY AND ENGINEERING NEWS.

MORPETH SEWERAGE.—A Local Government Board inquiry was recently held in the Town Hall, Morpeth, by Colonel Turner, C.B., R.E., Engineering Inspector, for sanction to a loan for works of main sewerage and sewage disposal. The scheme, which was explained by the engineers, Messrs. D. Balfour & Son, of Newcastle, provides for 25 per cent. increase in population, and consists of the laying of various intercepting sewers to prevent the pollution of the river Wansbeck at several points on its banks, the whole of the sewers converging to a common point at the Low Stanners, where a 24 in. storm water overflow drain is now being laid. The sewage, after passing through detritus and screening chambers, will be first treated in three bacterial tanks, each 126 ft. long and 36 ft. wide, on the Ducat principle, which are self-acting, making no sludge and being continuous in action. The effluent from the tanks will gravitate into an underground storage tank having a capacity of 70,000 gallons, on top of which will be an engine-house, and it will then be pumped by 7-in. centrifugal pumps, actuated by a gas-engine and each capable of discharging 40,000 gallons per hour through a cast-iron pumping main for a distance of about 400 yards to a field in the Parish Haugh, where the final treatment, as required by the Local Government Board, will be through land, the effluent from which will be discharged into the river. There was no opposition to the scheme, and the site of the proposed works was afterwards inspected by Colonel Turner.

WATER SUPPLY, SANDRINGHAM.—During the past autumn works have been carried out on this estate for providing an additional supply of water to Sandringham Hall. The main supply is drawn from the chalk, but, owing to the recent successive dry seasons during certain months of the year, the water issuing from the springs has considerably fallen off, and some difficulty has been experienced in keeping up the supply. The site of the new works is to the north of the house, the water being collected from the lower greensand formation and led into an underground tank, whence it is raised by means of an oil engine and a set of pumps. A new main has been laid from this pumping-station to connect with the existing system of pipes, and thus the water is pumped direct up to the tank on the top of the water tower. The new works have been in operation for the last six months. They were designed and carried out by Mr. Martin W. B. Ffolkes, civil engineer, of Westminster. The sluice valves, air valves, and other fittings were supplied by Messrs. Ham, Baker, & Co., of Westminster.

FOREIGN.

FRANCE.—The burning of the house of the Théâtre Français in Paris has been fully described in the daily papers; but in reference to the subject it may be noted that M. Stanislas Ferrand, an architect who is also a Deputy, has brought up for consideration a law that all public buildings, theatres, meeting halls, museums, &c., built and supported at the cost of the State, whether in the capital or in provincial towns, should in future be placed on entirely isolated sites with streets all round them, and that the source of artificial heating should be exterior to the building. This law, if adopted, would, as far as the rebuilding of the Théâtre Français is concerned, necessitate the opening of a new street in the Palais Royal quarter.

FAR EAST.—A Christian house of worship has recently been opened at Nikko, in Japan. Although designed to a large extent for foreign residents who spend the summer at that popular holiday resort, the building is essentially Japanese, so far as the materials of construction are concerned. The windows are covered with paper, instead of being glazed, and split bamboo has been freely employed.

UNITED STATES.—The cost of building materials is slowly declining, and the movement is expected to continue for the remainder of the year.——Plans have been prepared for additions to the Capitol at Washington. The proposed new work will consist of porticos and aprons on the east and west sides of the building, in harmony with the porticos of the two great wings. Ninety-three additional rooms will thus be provided.——New banking premises are about to be erected in Chicago for the National Bank at a cost of 200,000 dollars; Messrs. Jenny & Mundie of that city are the architects.——A new theatre, to be known as the "Illinois" is about to be built on the site of the old armoury, Chicago. The material employed will be chiefly stone and polished granite. No fewer than forty exits have been arranged, and the building will be of fire-proof construction.——The great sanitary canal, which turns the Chicago river with all its drainage back from the lake towards the rivers which drain into the Mississippi, has just been opened. It is one of the most important engineering works ever carried out in the United States, and is expected to have a salutary effect on the health of Chicago. The canal has a flow of 600,000 cubic feet per minute, has a minimum depth of 21 ft., and is from 100 ft. to 300 ft. in width. The Great Lakes have thus been connected with the Gulf of Mexico; and the cost of the whole work was about thirty-eight million dollars.——A new Government printing office is about to be erected at Washington, at a cost of about two million dollars. It consists of a "repeated unit of horizontal spacing approximating 12 ft., and a repeated vertical division of 16 ft., floor to floor." The architect is Mr. J. G. Hill, of Washington.

CANADA.—A large building for the Sun Life Assurance Company, of Canada, has recently been erected at Hamilton, from the designs of Messrs. W. & W. Stewart. It occupies the site of the old post-office building. The halls are finished in Numidian marble, with dado panels of Mexican onyx. The staircase is of Tennessee marble, and the floors throughout are of marble mosaic.——The Dominion Parliament is considering a Bill providing for Government regulation of the sanitary conditions surrounding workmen employed on railways and other public works.——Public improvements on a large scale are about to be effected at Ottawa, and a Commission has been entrusted with the expenditure of $60,000 per annum for that purpose. The first work decided upon is the establishment of a number of spacious boulevards.

AUSTRIA-HUNGARY.—The administration of public buildings for the city of Fiume announces its intention of erecting an artistic façade to a large church in that city, and offers premiums to the value of 2,000 kr. and 1,000 kr.; further particulars may be obtained at the Stadtbauamt.——A project is on foot to make important building alterations or additions to the old town-h ll at Prague, and the question is now under the consideration of the Municipal Authorities.——The District Authorities of Kladno are about to erect a large hospital, and have invited designs from architects; we learn that the award will shortly be made.——A new town hall is about to be erected at Deva.——An influential committee has decided to erect an elaborate monument in Buda-Pesth to the late Queen Elizabeth, the designs being limited to Hungarian artists. The President of the Committee, Herr Georg Rath, has been authorised to announce that three premiums of 10,000 kr., 6,000 kr., and 4,000 kr. respectively will be given to the authors who shall be adjudged first, second, and third in order of merit.

ITALY.—Some old quarries in Oriental alabaster (onyx, of authors) have recently been discovered in the neighbourhood of Monte Amiata, to the south of Florence. The chief interest in the discovery is that it now seems certain that the beautiful columns of that material in the interior of the Cathedral of Siena came from these quarries. The stone is about to be placed on the European markets.——A large workhouse is about to be erected at Cefalu; it is a building of some pretension, on three floors. The architect is Sig. S. Pernice.——The Italian Government is seriously thinking of granting a concession to a business firm enabling the latter to dredge the Tiber, in the hope of finding antiquities known to be in the bed of the river, for some miles both above and below Rome. The work would also have the effect of getting rid of certain mud banks, and improving the health of the city.

INDIA.—The Government of India has authorised a special addition to be made to the Madras provincial expenditure to enable the Presidency to carry out the construction of new lighthouses, and to improve existing ones.——Mr. Santo Crimp has made an additional report on the Bombay water supply, with special reference to the inadequate and intermittent supply at present received. The quantity of water daily delivered in the city is thirty-five million gallons, and of this fifteen millions are absolutely wasted, the waste being due to leaky taps and sewers, and to the habit of many persons to leave the taps open. The remedy suggested is to insist that all taps shall be of an approved pattern. Apart from waste, however, it is said that much of the water is not properly distributed. —— Plans and estimates are to be prepared for the proposed quadrupling of the line on the Eastern Bengal Railway from Naihati.—— The construction of a hospital for soldiers' wives and children at Jubbulpore has been sanctioned.—— The new Government House at Naini Tal has now been completed except the central tower, which is to be constructed at some future time. It is in the Domestic Gothic style, and the architect is Mr. F. W. Stevens, of Bombay.——The question of the construction of a sanatorium at Shillong, for the benefit of the employés of the Assam-Bengal Railway, is under the consideration of the railway company, and it is considered certain that the work will be carried out.

POLICE QUARTERS, HYDE PARK.—Temporary quarters for the Metropolitan Police are being erected in the Park, on an enclosure situated to the east of the Magazine, and close to the site of the recently-demolished Magazine guard-house. They will be occupied during the demolition and rebuilding of the present police station and barracks in the Park.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. G. H. Bruton, architect, has removed from 15, Queen-street, to 119 Queen-street, Cardiff.

CHICHESTER CATHEDRAL. — At the last meeting of the General Committee for the restoration and repair of the cathedral, a vote of condolence with the family of the late consulting architect, Sir Arthur Blomfield, was passed. It was stated that a sum of 900*l.* was still required to complete the rebuilding of the north-west tower.

CONDITION OF WESTMINSTER ABBEY.—In a lecture delivered at the Chapter House, St. Paul's, by Mr. J. T. Micklethwaite, the new surveyor of Westminster Abbey, the speaker stated that the old stonework of the Abbey was fast crumbling to pieces, owing to the fumes of the works on the other side of the river. Mr. Micklethwaite illustrated the damage done by slides showing the white patches on the exterior and interior of the Abbey which he asserted were the direct result of the fumes, which caused pieces to fall away.

THE TEMPLE OF HERA AT ARGOS.—In his second lecture on "Recent Excavations at the Argive Heræum in Greece," delivered at the Royal Institution on the 8th inst., Dr. Waldstein pointed out that in the last twenty-five years a marked revolution had taken place in the views held in respect to the earliest Greek civilisation and art. The older archæologists made two mistakes—in regarding as the earliest products of Greek art statues which we should not now dare to date before the ninth or eighth centuries, and in attaching too much importance to the Homeric poems as affording proper indices for the study of early Greek civilisation. Students were now realising that the poems marked the end, not the beginning, of a civilisation and presupposed long stages of anterior evolution. Since Schliemann began his work a new period —the Mycenæan — had been established round 1500 B.C. When this died out, it was succeeded by a new and lower civilisation, marked by the inroad of the Dorians—a kind of dark Middle Ages round 1100 B.C.—and then an Orientalising influence came in and led on to the highest period of historic Greek art. From this point of view the site of the Argive Heræum was of the greatest interest. The importance of the Mycenæan period had been exaggerated, and scholars had supposed it to be the beginning of Greek civilisation, while admitting the existence of an earlier life to which they refused the title Hellenic. But, in the lecturer's opinion, it was necessary to go further back still, and assume that before that period there were at least three centuries of civilisation in the Argive plain, Hellenic in character, and continuous in development. This theory was supported by evidence drawn from topographical and architectural considerations, from mythology, and from literary tradition. This development was illustrated by the terra-cottas found on the site of Argos; the earliest of these could be classified into eight or nine different types, several of which antedated the Mycenæan period. As regards continuity of development, the lecturer pointed out that Mycenæan art, distinguished by the introduction of glazed colours, by its freehand drawing, and by the naturalistic character of its design, was succeeded by a period of mere geometrical mechanical ornamentation, which, again, was followed by the proto-Corinthian with linear designs. This linear ornamentation had been regarded as being in contradistinction to the naturalistic feeling, which was held to be Hellenic, but he considered that the linear was the earliest principle of design and that it could be traced continuously with the other, in vases, &c., right through the Mycenæan period from the early beginnings of Greek art. Many photographs were shown illustrating this and other views propounded by the lecturer.—*Times.*

THE EDUCATION DEPARTMENT.—We understand that under the scheme that is now being made for a re-constitution and re-arrangement of the Education Department and its administration, it will be recommended to carry out a transfer to the Irish Agricultural and Industrial Department of the Royal College of Science, the National Library, the School of Art, and the Botanical Gardens, which are at present comprised in the Science and Art Department, Dublin; it is proposed, however, to vest, as heretofore, in the authorities at South Kensington, the distribution of the Parliamentary yearly grants in respect of teaching in science and art.

BUILDING ENTERPRISE IN LEEDS: THE BACK-TO-BACK HOUSE QUESTION.—Beeston Hill, Burley, and Armley are all districts to which the speculative builder is paying close attention just now. On the 2nd inst., among the 112 plans which came before the Building Plans Section of the Corporation Improvements Committee there were several relating to dwellings of the back-to-back type on new large estates in the suburban parts abovementioned. So far as the Beeston locality is concerned, the prospect of hemming in Cross Flatts Park with back-to-back houses is not viewed with favour either by the villa and terrace-house residents or by those who habitually "take the air" in the park. Some people hold that the park would have reasonably borne widening at the point where it is now proposed to block up the outlook with bricks and mortar. The Improvements Sub-Committee have, however, passed the plans which, it is but fair to state, provided for 15 ft gardens. Included in the list of larger extensions were the "Bull and Mouth" and Bodega schemes, both of which were passed. A new "Bull and Mouth" Hotel in Briggate, an "emporium" and a block of shops form part of the former arrangements. The contract is said to be about 80,000*l.* or 100,000*l.* Provision is made for a new street 42 ft. wide from Kirkgate past the new shops into Central-road and Duncan-street. The Bodega building is, as already reported, to be erected in Infirmary-street, on the site of the Cloth Hall Tavern, and will occupy the space between Wine-rtreet and Bond-place. It is to be seven stories in height, with a terra-cotta façade and projecting windows.—*Yorkshire Post.*

BACTERIAL TREATMENT OF SEWAGE. — The Friday evening discourse last week at the Royal Institution was given by Dr. Frank Clowes, who, taking "Bacteria and Sewage" as his subject, gave some account of the experiments in the bacterial treatment of sewage which for the last two years he has been carrying out in association with Dr. Houston on behalf of the London County Council. Since 1893 a bed of coke, an acre in extent and 3 ft. or 4 ft. deep, he said, had been in almost continuous use at the sewer outfall into the Thames. The method adopted was to run the raw sewage, roughly screened and subjected to a rapid process of sedimentation in order to remove the sand, woody fibre, &c., into the coke-bed, allow it to stand for three hours, and then slowly withdraw the liquid, which was then entirely free from offensive odour. The purification thus effected by the coke-bed depended on the introduction of bacteria from the sewage itself, and was maintained by the presence of these bacteria or their enzymes on the coke surfaces and by the frequently renewed contact of the surfaces with oxygen. On an average 51·3 per cent. of the dissolved matter of the original sewage was removed by this treatment, and by repeating the process a still larger proportion could be got rid of. More recently the lecturer had experimented with a bed of coke 13 ft. deep, which had proved even more efficient. The sewage effluent was quite inoffensive and remained so even after it had been kept for a month. It was well aërated and maintained its aëration, having enough dissolved oxygen to support the life of fish, which, indeed, had been kept in it for a month without detriment to their health. The introduction of such sewage into the Lower Thames appeared to be unobjectionable, since the water there, being always muddy and brackish, owing to the presence of tidal sea water, could not in any case be used for drinking purposes. The effluent would certainly cause no deposit on the river-bed, and would even tend to clarify the muddy river water by mixing with it. No offensive smell could be emitted by it when it was being discharged, and afterwards the bacteria it contained would slowly remove the remaining dissolved organic matter. It would be suitable, too, for the maintenance of healthy fish-life in the river.

LONDON MASTER BUILDERS' ASSOCIATION.—In our report last week of the annual meeting of this Association we stated that Mr. G. J. Lough is of West Bromwich; it should have been "Brompton, S.W."

THE BORGHESE COLLECTION.—It is authoritatively stated that the Borghese collection of paintings and sculpture is about to be purchased by the Italian Government for 3,600,000 lire, or about 133,000*l.*

ELECTRIC TRAMWAYS, GLOUCESTER.—An inquiry was recently held at Gloucester before the Earl of Jersey, K.C.M.G., and Colonel Boughey, C.S.I., two of the light railway commissioners, into the proposed light railways scheme for Gloucester, the promoters being the City of Gloucester Tramways Company. It was stated that the proposed scheme would extend the tramways to over eight miles, the districts of Tuffley, Hucclecote, Barnwood, and Bristol-road, coming within the scheme. The total cost, including equipment, would be about 95,000*l.* Mr. J. Clefton Robinson is the engineer to the promoters.

ELECTRIC LIGHTING, &C., LEICESTER.—On the 14th ult. Colonel H. F. Turner, C.B., R.E., an inspector to the Local Government Board, held an inquiry at the Municipal Buildings, Leicester, relative to the application of the Corporation for sanction to borrow 100,000*l.* for purposes of electric lighting and 1,100*l.* for street improvements. Mr. Colson, the Borough Electrical Engineer, explained that the 100,000*l.* was for the purpose of extending the electric lighting works, the demand for current having more than doubled since 1897. The street improvement loan was for the purchase of land to widen Town Hall-lane.

ROYAL PALACES AND PARKS.—Among the new Government works to be executed in the coming financial year, with the sanction of the Treasury, are the following:—Buckingham Palace, installation of electric light (total cost 11,000*l.*, of which about 6,000*l.* has so far been expended), further on account, 2,500*l.*; ventilation of conservatory, 250*l.*; improved laundry accommodation for servants, 400*l.* Royal Mews, Pimlico, fireplaces and enlarged windows in living rooms, 300*l.* Windsor Castle, installation of electric light, further on account, 2,000*l*; additional air-shafts for kitchen, 100*l.*; removal of boilers from upper floors to basement, 650*l.*; glass-covered shelter for carriages, 350*l.* Windsor Kitchen Gardens erection of cart and implement shed, 400*l.* St. James's Palace, installation of electric light in Chapel Royal and other parts of the Palace, on account, 400*l.* Hampton Court Palace, alterations, &c., to great vine house, 150*l.*; enclosure of additions to works yard, on account, 250*l.* Marlborough House, new coal lift, 130*l.*; works and alterations of a minor character, 200*l.* Bushey Park, re-building stables at farm-yard, 350*l.* Greenwich Park, general improvements, 500*l.*; completion of new footpath, 250*l.* Hampton Court Pleasure Gardens, reconstruction of plant houses, &c., in new frame ground, 1,000*l.*; improvements near the Trophy Gate, 250*l.* Kew Gardens, completion of new filter bed, 185*l.*; experimental well, laying new main and continuing works, 900*l.*; new potting shed, 100*l.* Regent's Park, new workshops, 600*l.*

BRITISH AND NATURAL HISTORY MUSEUMS.—It has been decided to carry out the following works this year at the costs stated:—British Museum, formation of skylights in American Room, 600*l.*; ditto in Asiatic Room, 400*l.*; provision of high-pressure fire service to roofs of main building, &c., 500*l.*; continuation of the range of workshops against the western boundary wall, 550*l.*; works and alterations of a minor character, 200*l.* Natural History Museum, formation of skylights to passages leading from the Bird Gallery to the annexes, 450*l.*; further on account of electric light installation (total estimated cost 7,500*l.*), 1,000*l.*; works and alterations of a minor character, 500*l.*

PUBLIC IMPROVEMENTS, OSWESTRY.—A Local Government Board inquiry was held at Oswestry on the 21st ult., by Lieut.-Col. Albert Smith, R.E., with reference to applications by the Town Council for sanction to borrow certain sums of money for widening and improving Albert-road, and for erecting a fire-station, stables, and cart-shed, &c. The Town Clerk gave evidence, and Mr. G. William Lacey, C.E., Borough Engineer and Surveyor, produced and explained the plans and estimates. There was no opposition to the proposals.

LEBANON HOUSE, TWICKENHAM.—By order of the late Captain Willis's executors, the freehold property, of about eleven acres, known as Lebanon House, will shortly be offered for sale at auction. The house, which has a frontage to the river, opposite Ham House and Eel Pie Island, formerly belonged to the Earl of Strafford, after whose death it was occupied during many years by the late Dowager Duchess of Northumberland, and since by the Prince de Joinville.

CAPITAL AND LABOUR.

THE PLASTERERS' DISPUTE.—There is nothing to report in regard to this dispute, except that a meeting of representatives of the London Master Builders' Association and the National Association of Operative Plasterers was to have been held on Friday evening, when, we hope, final terms will have been settled and signed.

THE DISPUTE IN THE WOLVERHAMPTON BUILDING TRADE.—The demand of the carpenters in Wolverhampton and district for an advance of one penny per hour from April 1 next is still left in abeyance. It is understood that a deputation from each side will again meet at an early date to discuss the situation. A second meeting has been held, but, although the men are reticent about their movements, they are very hopeful of success. All are sanguine of receiving the advance, even if they have to forego the alterations of the rules for a while. It is asserted that at one of the larger establishments, which has quite two years' work in hand, there will be no difficulty in obtaining the extra penny, while at another shop the employers will, it is said, offer a halfpenny. There are three branches of the trade society in the town. For the purposes of the dispute they are acting in concert, and should a general strike or lock-out be necessary, between 300 or 400 men will be affected. They, however, seem disposed towards conciliation, and say they have abundant proof that the state of trade merits the increase. Last month's return of the trade show a very favourable comparison over the corresponding month of last year, and February, they claim, is the worst month of the year for them.

LEGAL.

IMPORTANT CASE UNDER THE WORKMEN'S COMPENSATION ACT:

BUILDER'S SUCCESSFUL APPEAL.

THE case of Fenn *v.* Miller came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 10th inst., on the appeal of the defendant from the award of the County Court Judge of Bow, in a claim under the Workmen's Compensation Act, 1897.

Mr. J. F. P. Rawlinson, Q.C., and Mr. Rose Innes appeared for the appellant (defendant); and Mr. Ruegg, Q.C., and Mr. W. M. Thompson for the respondent (plaintiff).

Mr. Rawlinson said that this was an appeal by the employer, a builder, from the decision of Judge French, awarding the plaintiff, a builder's labourer in the employment of the defendant, 15*s.* a week

compensation for life in a claim under the Act. The defendant was engaged in developing a large building estate near Chingford, in Essex. Certain buildings were in course of erection on the estate, which at the date of the accident were some 5 ft. or 6 ft. high. At some distance from these buildings was a barn, which contained an engine used for the mortar mill which supplied the mortar for the building operations. The plaintiff's duty was to take a water cart down to Chingbrook, a quarter of a mile away down the Chingford-road, and after filling the cart with water take it either to the buildings where the mortar was being mixed by hand, or to the barn where the engine was turning the wheel of the mortar mill. On the day of the accident the plaintiff went down to the brook and filled the water cart, and was driving or leading his horse back along the Chingford-road, when the horse bolted and knocked down and ran over the plaintiff, whereby he sustained serious injuries. The scene of the accident was distant 487 yards from the nearest building in course of erection on the estate, and 236 yards from the barn where the engine was.

Mr. Ruegg, interposing, said that the evidence for the plaintiff was that it was only 150 to 200 yards from the barn.

Mr. Rawlinson replied that the distance had been measured, and was 236 yards. At the trial Mr. Rose-Innes, for the defendant, submitted, first, that the plaintiff was not engaged "on, in, or about", the building at the time of the accident; and, secondly, that the buildings, such as they were, did not come within the purview of the Act. The County Court judge, however, held that at the time of the accident plaintiff was engaged "on, in, or about" a building, and was entitled to recover compensation. He (Mr. Rawlinson) now submitted that the decision of the learned County Court judge was wrong, and that in the circumstances plaintiff could not be said to have been engaged "on, in, or about" a building at the time of the accident.

Lord Justice Smith pointed out that that Court had held that a cart standing at the door of a factory and loading goods from the factory was "on, in, or about" a factory within the meaning of the Act.

Mr. Rawlinson agreed, but pointed out that the cart in that case was in very close contiguity with the factory. The learned counsel cited the cases of Powell *v.* Brown and Lowth *v.* Ibbotson, and contended that a man driving a cart along a highway as the plaintiff was doing could not be said to be engaged "in or about" a building within the meaning of the statute.

Lord Justice Smith: Supposing a workman was building a house, and he had to get his bricks 100 yards away from the house, and he got damaged in getting those bricks, what do you say then?

Mr. Rawlinson: I should say that he was merely bringing the bricks to a house. He would not be employed "in or about" a building.

Lord Justice Smith: Do you say this is a matter of law?

Mr. Rawlinson: Yes, I say it is a matter of law. I submit that there was no evidence in this particular case that the man was employed "in or about" a building at all. I do not say that in no possible circumstances a man—say, 150 yards off—could not be engaged "in or about" a building. I say, in this particular case, there was no evidence that the man was engaged "in or about" the building.

Lord Justice Smith: Supposing the horse had been standing outside the building and ran away and killed the man, what then?

Mr. Rawlinson: I should say the man, being a mere labourer, was not employed "in or about" a building. There was no evidence that the man was employed "in or about" the building or the curtilage of the building. The idea of physical contiguity must come in somewhere. The learned counsel pointed out that at the time of the accident there was no building in course of erection over 30 ft. high. The defendant's evidence was that the highest building was 5 ft. or 6 ft. high. A further point was that the judge might have decided the case on the suggestion that the barn containing the engine was a factory within the meaning of the Act. The effect of the decision in the case of McNicholas *v.* Dawson was to make machinery a factory within the meaning of the Act. The premises containing the machinery did not become a factory, but the machinery could be a factory itself. That the learned County Court judge had clearly not found in the present case, but, even if he had, there could be no suggestion that this plaintiff, a labourer, was employed "in or about" the engine in any shape or form, or, in other words, "in or about" the machinery.

Lord Justice Smith: Is it a fact that the water was being bought to feed the steam-engine which was driving the mortar mill?

Mr. Ruegg replied that that was so. Some of the mortar was made by the mill and some by hand, and the water was required for both purposes.

Lord Justice Smith said that the question whether the factory or the buildings in course of erection were 150, 200, or 300 yards from the scene of the accident was a question of fact for the County Court judge.

Mr. Rawlinson submitted that the learned County Court judge had misapprehended the point to be left to him. The question of the machinery being a factory was not before him at all. He decided that the plaintiff was "in or about" a building in the course of erection. There was not a word suggested in his note about the engine being a factory or anything of the kind.

Mr. Ruegg, for the respondent, pointed out that the building estate in question was a large one, and the whole of the land was under the control of the defendant. The Chingford-road ran on one side of the estate. There were two factories in the sense that there were two steam-engines which were used for the purposes of the buildings. The learned counsel said that the only building which was referred to before the learned County Court judge was the barn or shed containing the engine. The whole point was whether the barn with a steam-engine in it constituted a factory.

Mr. Thompson, in answer to a question from the Bench, said that the two mortar mills were in barns some distance apart from one another. On the day of the accident the mortar was being made by steam.

Mr. Ruegg, continuing his argument on behalf of the plaintiff, contended that the question as to how far the man was from the building or factory at the time of the accident was purely a matter for the County Court judge. If the man had been standing with the water-cart putting water into the engine at the time the accident happened he would be clearly "in or about" a factory. Then at what distance from the building or factory did the man lose his right to recover under the Act?

Lord Justice Romer: You say that even if he was 100 miles away we could not interfere?

Mr. Ruegg replied that that would be utterly unreasonable. It was a question for the jury or judge to say what was in propinquity to the buildings or factory. There could be no distinction between the land on which the factory stood and the factory itself. All the estate was used for the purposes of the factory or for building purposes.

Mr. Thompson having followed on the same side,

Lord Justice Smith, in giving judgment, said that in his opinion the facts as stated showed that the County Court judge was wrong. It appeared that the plaintiff was knocked down and injured between 110 and 160 yards from the mortar mill. It seemed to him that by the decision in McNicholas *v.* Dawson, the engine was made a factory, and, therefore, the question was whether the plaintiff at the time he met with the accident was employed "in or about" the factory. He could not think that the plaintiff came within the purview of the Act at all. The County Court judge had held that inasmuch as the word "about" was elastic, he was entitled to find that 110 yards was in close propinquity, or was physically contiguous to the engine shed. It would take a good deal to make his lordship find that. Although he could not go the length of saying that there was no evidence on which the learned County Court judge could so find, he thought that the appeal ought to be allowed.

Lord Justice Collins concurred. In his opinion the word "about" meant physical contiguity. It was not enough to bring a person within the Act to say that he was employed about the business of his master. He did not think there was any evidence on which any jury could reasonably hold that the plaintiff at the time of the accident was in such physical contiguity to the factory that he was capable of being described as "in or about" the factory.

Lord Justice Romer concurred, and the appeal was accordingly allowed with costs, judgment being entered for the defendant, the master.

ACTION AGAINST A BUILDER:

CLAIM FOR DRAINAGE WORK.

IN the Westminster County Court, recently, his Honour, Judge Lumley Smith, Q.C., tried the case of Causton *v.* White, in which the plaintiff, a builder, carrying on business at Bromley, Kent, sued the defendant, who is the tenant of a house known as Garisbrooke, Highland-road, Bromley, to recover the sum of 23*l.*, being the amount expended on the drains at the instance of the Bromley Urban Council, and which work, it was contended, was rendered necessary owing to the negligence of the defendant.

For the defence the claim was disputed, and the defendant set up a counterclaim for damages for loss of use and occupation of the house for a period of six weeks owing to the defendant's delay in carrying out the work ordered by the Urban Council.

The defendant, Mrs. White, was called, and said she took the house from the plaintiff in February, 1895, under an agreement by which he undertook to keep the drains in thorough repair. In September, 1899, she wrote to the plaintiff to the effect that there were very bad smells in the house, and that she had a suspicion that the drains were defective, and in due course he sent two men to report upon them. Some work was done to them, but they afterwards became worse, and consequently she wrote to the Local Authorities, who sent a sanitary inspector. When the drains were first examined, it was found that the servants had dropped a scrubbing-brush down the water-closet in the basement, but it was proved that that had nothing whatever to do with the smells. Subsequently the Local Authorities took the matter up, but owing to the plaintiff's delay in getting the work properly done, and acting on the advice of her medical man, she (defendant) left the house and lost the use and occupation of it for a period of six weeks.

On behalf of the plaintiff it was contended that the whole of the work was rendered necessary in consequence of the very bad treatment to which the drains had been subjected.

After a very lengthy hearing, his Honour said, he did not believe the scrubbing brush had anything to do with the bad condition of the drains, and therefore, as to the claim of 23*l.* there would be judgment for the defendant. With regard to the counterclaim for loss of use and occupation, he (the Judge) was prepared to give a verdict for the defendant on that point also, for 4*l.*, or, in the alternative, nominal damages of 1*s.*, which might save the case from going to the Court of Appeal.

The defendant's solicitor intimated that his client was prepared to take a verdict for nominal damages of 1*s.* on the counterclaim.

His Honour thought that was the best course, and gave judgment for the defendant both on the claim and counterclaim with costs.

NUISANCE BY NOISE AND VIBRATION:

INJUNCTION AGAINST A DISTRICT COUNCIL.

THE case of Hawkes *v.* the Leyton Urban District Council was heard by Mr. Justice Buckley in the Chancery Division, recently, it being an action by the plaintiff, Elijah Hawkes, for an injunction to restrain the defendants, their servants, and agents, from carrying on their electric supply works at Leytonstone, so as to cause a nuisance by noise and vibration to the plaintiff as owner and occupier of premises in the Cathall-road, Leytonstone. There was an alternative claim for damages. The facts sufficiently appear from the judgment.

Mr. Justice Buckley said that the plaintiff was the owner of a house in which he resided in the Cathall-road, Leytonstone, and the action was brought by him for an injunction to restrain the defendants, the Urban District Council of Leyton, from carrying on certain electric supply works within the district so as to cause a nuisance by noise or vibration to the plaintiff. The plaintiff gave evidence of the actual existence of vibration and noise to a very considerable extent, and the evidence satisfied his Lordship that there did result in the operation of the defendants' work such an amount of noise and vibration as amounted in law to a nuisance. The defendants admitted that at the date of the issue of the writ down to July last the works were so carried on that there was a nuisance created, but they insisted that the alterations which had been made at the works had the result of remedying it altogether. The plaintiff, however, gave evidence that the nuisance had gone on down to the present time. Various other witnesses from the neighbourhood also spoke as to the existence of noise and vibration caused by the defendants' works. When defendants' counsel got up to open their case, his Lordship suggested that he wanted to hear evidence that the noise and vibration did not occur. Their counsel, however, indicated that he was going to call scientific evidence to prove that the circumstances were such that it could not occur. In the first place, he called Mr. Dugald Clark, who went down to the *locus in quo* on Saturday, February 24. That gentleman said he applied various tests and took with him instruments to detect horizontal and vertical vibrations. The witness said he was satisfied that there were no horizontal or vertical vibrations. He also said that he applied other tests by putting his ear to the floor, and so on, and the result was that he did not hear any noise.

Mr. Clark said that he had applied no tests at all as to the existence of aërial vibrations. The result of his evidence, therefore, was that the defendants' plant could be so run that a person could not detect horizontal or vertical vibration. That was the result of the whole of his evidence. Mr. Clark left the place about 9.30 p.m., and about 3 a.m. there was again extensive noise and vibration. The defendants had not met that at all, and had called no one to show what was the state of things at that time, and had done nothing to show his Lordship that the plaintiff's story as to that was not credible. His Lordship then referred in some detail to the evidence given by some of the defendants' engineers and said that he had come to the conclusion that the gas engines in the defendants' works required very careful watching to prevent them becoming a nuisance. Steam engines were very much better than gas engines, but the defendants said that to replace the gas engines by steam engines would be very expensive. It appeared that the demand for the electric light in the neighbourhood was large. The extension of and additions to the defendants' works had been made because a larger supply of electricity was required than the undertaking could furnish. The defendants were now working close to their full capacity. They were not going to stop their gas engines, but had ordered more steam engines. The state of things, therefore, was that the defendants would continue to use the gas engines, which would be supplemented by steam engines, for which additional buildings were

being erected. The plaintiff having proved that a nuisance was caused by noise and vibration, were not the defendants in the circumstances threatening to continue such a state of things? His Lordship thought they were. It was part of the defendants' case that their works could be carried on so as not to create a nuisance. When Mr. Dugald Clark went down, care was taken that the plant was run carefully, and as long as Mr. Clark was there there was nothing wrong at all. Soon after he went away, however, there were explosions. It appeared to him that he was bound to grant an injunction in the terms of the Court to restrain the defendants from so carrying on their works so as to cause a nuisance to the plaintiff by noise or vibration. He accordingly granted a perpetual injunction in those terms, and ordered the defendants to pay the costs of the action.

His Lordship suspended the operation of the injunction till April 9 to enable the defendants to consider what could be done to remedy the nuisance, the defendants undertaking in the meantime to stop the "back firing" in the exhaust pipes and explosions as far as possible.

A REASONABLE TIME IN WHICH TO OBJECT.

AT Brompton County Court, on the 5th inst., before Judge Stonor, Mr. Ernest Jones, builder, Meek-street, Chelsea, London, S.W., claimed 10*l.* from Mr. J. Knee, another builder, also of Meek-street, the claim being for balance of an account for brickwork, supply and fixing of iron pipes, &c.

The plaintiff stated that the work was done to defendant's orders, under a contract. He (plaintiff) was very busy at the time, and had to get the work attended to by another builder, under a sub-contract He, however, superintended, and saw the work properly done. Repeated applications had been made for settlement, but without satisfactory results.

The defendant maintained that some old pipes had been used in the work, instead of County Council iron pipes.

The Plaintiff: The work has been finished for the last six months. It was done under the direction of the sanitary authorities, and there has never been any complaint until now, as far as I am aware.

The Judge: Was anything said in the contract as to what pipes should be used?

The Defendant: We agreed that County Council iron pipes should be used. The sanitary inspector told me that he will have the work done again next year.

The Plaintiff: This is the first time that such a thing has been suggested to me.

The Judge (to the defendant): Did you see the work going on?

Defendant: Yes, sir. I had to look after the men.

The Judge: Then, why did you not object to the pipes?

Defendant: The sub-contractor's men were doing the work. It was no use objecting to them.

The Judge: Well, why did you not complain to the plaintiff himself? You say you saw the pipes used, and now, after six months—apparently for the first time—you object. There is a reasonable and an unreasonable time in which to object in such a case, and I do not think that you have objected within a reasonable time. I must find for the plaintiff. If the authorities move in regard to the work, perhaps you will be able to bring another action.

IS "STAGING" SCAFFOLDING?

A MASTER'S APPEAL UNDER THE WORKMEN'S COMPENSATION ACT DISMISSED.

THE case of Frid *v.* Fenton came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 10th inst., on the appeal of the defendant from the award of the Judge of the Rochester County Court, under the Workmen's Compensation Act, 1897. The facts were these:—

Frid was a bricklayer's apprentice in the employ of the defendant, who was constructing a chimney shaft at Cliffe, in Kent. The chimney shaft was an erection 100 ft. high, resting on cement foundations, and was built at the top of a perpendicular bank about 20 ft. high. For the purpose of doing the work it was necessary to erect a staging from the lower level to the top of the foundations. This staging was about 20 ft. in height from the lower level to the top of the cement foundations, and was constructed by poles, ledgers, and putlogs. At the top of the staging, on a level with the top of the cement foundations, boards were laid to form a flooring. The only access to the work was by means of the staging, and from it through an opening left at the bottom of the brickwork of the shaft. The materials used in the construction of the shaft were brought in at the bottom of the shaft through the staging, and were hauled up the shaft by means of a winch on the lower level and a pulley with a rope running through the pulley on the top of the shaft. The construction of the brickwork of the shaft was done by means of scaffolding erected upon putlogs inside the shaft, the putlogs being supported by being placed through apertures left in the brickwork, and this scaffolding and the putlogs on which it rested were raised from time to time, as the building rose, at intervals of 5 ft. The day before the accident happened the construction of the brickwork of the shaft had been completed, and the scaffolding inside the brickwork and the gear used in the construction had been removed and brought down to the staging; the opening at the bottom of the shaft, which had been used for access to the shaft and for taking in the materials, was bricked up; and the shaft was in working order and in actual use, with the exception that a lightning conductor which had been run from the top of the shaft required a copper plate to be fixed on the end of it and buried in the ground at the lower level. On June 9, when Frid was engaged in removing gear from the staging erected outside the shaft, he stepped upon a plank which tipped up, and he fell about 20 ft. and was injured. The County Court Judge held that the shaft was a "building" within Section 7 of the Act, and that it was at the time of the accident being constructed by means of a scaffolding, namely, the staging erected from the lower level to the top of the foundations of the shaft. He held that the staging was "scaffolding" within the meaning of the Act, and that the building was at the time of the accident being "constructed," because, he said, it could not be said to be completed until the scaffolding was removed, the removal of the scaffolding being part of the work of construction. He awarded Frid 10*s.* 7*d.* a week. Mr. Geo. Powell, for the appellant, argued that the shaft was not being constructed when the accident happened. How could it be said that the building was being constructed. "Construction" would seem to be the putting together of things. The staging was being demolished. There was no construction in any way whatever. It was part of the contract that the contractor should take away the scaffolding, but the mere fact that it was there did not show that the building was being constructed. It was, rather, being "destructed." There was no scaffolding outside or inside the chimney, but there was the staging which happened to be a few yards from the base of the chimney. It would have made no difference to the construction of the chimney if the staging had been a quarter of a mile away, and it would have made no difference to the chimney if it had remained there till Doomsday.

Lord Justice Smith, in giving judgment, without calling upon counsel for the workman, said he was of opinion that the learned County Court Judge had come to a proper decision in the matter. To put such a construction on the Act as was now asked by the master would be cutting it down to nothing.

The other Lords Justices concurred, and the appeal was accordingly dismissed, with costs.

HEAVY AWARD UNDER THE WORKMEN'S COMPENSATION ACT:

DISPUTE BETWEEN BUILDER AND PLUMBER.

THE case of Cooper *v.* Davenport (Winstanley third party) came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 10th inst., on the appeal of the third party from a decision of the Judge of the Warrington County Court, ordering him to indemnify the respondent, Davenport, for the amount of an award which the latter was ordered to pay the applicant, Cooper, in a claim under the Workmen's Compensation Act, 1897.

Mr. Ruegg, Q.C., in support of the appeal, said the facts were these:—Mr. Davenport was a builder who had contracted to build for the Warrington Guardians a workhouse infirmary, but he had sublet the plumbing work to Mr. Winstanley. Cooper, the man killed, was in the employment of Mr. Winstanley. The building in question was admittedly a building to which the Act applied, being over 30 ft. high. Cooper was killed by the giving way of the scaffolding, and it was admitted that his widow had a claim against either Davenport or Winstanley. His widow brought the action against Davenport, and the Judge awarded her 260*l.* compensation against him. Davenport then brought Winstanley in as a third party under the Act as being the person liable, and the County Court Judge held that Winstanley was liable to indemnify Davenport, and made an order to that effect. The learned counsel said that the question turned upon Section 4 of the Act. In the present case Davenport was the "undertaker" of the whole building, therefore the applicant had a clear right under the section against Davenport, and that right was undisputed. The question was, whether Davenport had the right to be indemnified by Winstanley. His point was that Winstanley never could have been liable to the applicant, and first, because he was not the "undertaker" of the building. Winstanley could only be liable in one of three states of circumstances, viz., either under the Workmen's Compensation Act as the "undertaker" of the building, which he was certainly not; secondly, under the Employers' Liability Act of negligence—there was no attempt to show negligence at all; and, lastly, if he was liable at common law, which he was not.

In answer to Lord Justice Smith, Mr. Ruegg stated that the scaffolding from which Cooper fell belonged to Winstanley.

Lord Justice Smith: There was no evidence that the scaffolding was put up negligently by Winstanley?

Mr. Ruegg: No evidence at all.

Mr. C. A. Russell, Q.C., for the respondent Davenport, said that the question was not before the County Court Judge at all.

Mr. Ruegg submitted that before Davenport could get indemnity from Winstanley he must prove that the latter was an "undertaker" within the meaning of Section 4 of the Act. The Court of Appeal had already decided that in the case of Cass *v.* Butler (reported in the *Builder* of March 3).

Mr. Russell said that the matter was of considerable importance. The decision of the Court in the case of Cass *v.* Butler was that the only right of action which the workman had under the Act was against the general contractor, and that he did not have an option of suing either the general contractor or the sub-contractor. He had to sue the general contractor, leaving that person to recover from the sub-contractor if he could.

Lord Justice Romer observed that the whole point had been argued out in the case of Cass *v.* Butler. This was really covered ground. The learned counsel would have to show that a "sub-contractor" was an "undertaker" within the Act.

Mr. Russell: No, I say that independently of Section 4 a sub-contractor comes within the definition of "undertaker."

Lord Justice Romer: "Undertaker" in the case of a building means the person undertaking "the construction, repair, or demolition." You are not entitled, for the purpose of construing the Act, to strike out Section 4 as if it had never been in.

Mr. Russell said that the Court had held in the case of Mason *v.* A. R. Dean, Limited (Moore & Sons, Limited), reported in the *Builder* of February 24, that more persons than one could be "undertakers."

Lord Justice Smith pointed out that A. R. Dean, Limited, were "undertakers," inasmuch as they had taken a substantial part of the contract direct from the building-owner under powers reserved in Messrs. Moore & Sons' contract.

Mr. Russell remarked that he only cited the case for the purpose of showing that there could be more than one contractor engaged in the construction of a building. The learned counsel submitted that their lordships could very well decide this case favourably to his client, and still allow their decision in Cass *v.* Butler to stand. He contended that the words in Section 4 "provided that the undertakers shall be entitled to be indemnified by any other person who would have been liable independently of this section," gave Davenport the right to be indemnified by Winstanley.

Lord Justice Smith: Must you not show that he was liable independently of the section?

Lord Justice Romer: That you can only do by making out that the sub-contractor was the "undertaker."

Mr. Russell stated that as it appeared their lordships were against him on the point, he would not waste the time of the Court further.

Lord Justice Smith, in giving judgment, said that, having regard to the decision of the Court in the case of Cass *v.* Butler, the point taken by Mr. Russell was not open to him. In that case the Court had decided point blank that a sub-contractor was not an "undertaker" within the meaning of the Act. That was undoubtedly what the Court decided, and he and his learned brothers gave reasons for that decision. He now saw no reason to quarrel with those reasons any more than with the decision itself. He thought that the County Court Judge ought not to have ordered the indemnity, and that the appeal ought to be allowed.

Lord Justices Collins and Romer concurred, and the appeal was accordingly allowed, with costs.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

23,686.—A SAFETY APPLIANCE FOR USE IN CASE OF FIRE: *G. Nobes.*—For automatically shutting off gas supply a fusible wire, which is laid throughout the building, carries a conical valve; above the valve is a spiral spring, which, together with a weight upon the valve rod, will close the valve when the wire becomes fused. The valve's casing is fixed in the main supply pipe.

23,702.—ASPHALT FOR PAVING, &C.: *J. W. Pattison.*—Rotary agitators and double bottoms, to serve as either water or steam jackets, are fitted in the heating vessels. Condensed water returns into the boiler, but if a temperature only a little above 100 deg. C. is needed, the pass-cock should be closed so that the steam shall condense until the jackets are filled. The apparatus may be mounted upon wheels for purposes of paving operations.

23,754.—BRUSH AND SIMILAR HANDLES: *L. M. Cooper.*—A split ferrule made, say, of sheet steel, and having rows of teeth and turned-in lugs, is devised for fixing the brush's handle on to the stock, with which some of the teeth engage, whilst the other teeth—whose points turn inwards—engage with the handle, the lugs are intended to prevent the lower edge from cutting the stock.

23,779.—AN APPLIANCE FOR HAND-TOOLS: *A. F. L. Haverkamp.*—A thumb-screw fixes the screw-driver or boring-bit to a sleeve to which a rod, that freely turns in the sleeve, loosely joins a cross-handle; to the sleeve is pinned a crown ratchet-wheel with which engage the teeth of a washer that slides, but does not turn, upon the squared portion and is forced downwards with a spring; the tool rotates in only one direction when the cross-handle is turned to and fro without removal of the workman's hand, whilst the direction is governed by the ratchet mechanism of the tool he uses.

23,792.—APPARATUS FOR FLUSHING: *W. H. Doyle.*—A screw cap presses upon the ring valve of the water-pressure cylinder, a valve which is joined to another valve that carries a piston's connecting-rod enables, under normal circumstances, the water to enter from the inlet into the cylinder through aligned openings, and to force down the two valves and the piston; but the second valve and the piston are to be raised by the action of a fork upon a fluted spindle and the former valve, so that water will flow to the outlet; when a flush has occurred the two valves become closed, and without concussion, as the water slowly escapes. Siphonical action into the flusher is prevented by the admission of air into the pan passing the ball valve and flap. The flap becomes closed with the rise of water in the pan, and if the flap fails to act the ball-valve seals the air-inlet by a return to its seat.

23,814.—SASH FASTENINGS: *F. Martin.*—The sashes are fastened to loose sliding stiles on one side of the frame by means of pivotted spring catches adapted to engage with slotted plates and to draw the sash stiles firmly against the sliding stiles; the sashes are also hinged on to loosely sliding stiles upon the frame's other side. If it is desired to turn the sashes inwards upon their hinges, the upper sash should be lowered, when the loose stiles will not be lifted by the weights, as a pivotted retaining-bar is turned across the frame and engages with a catch; a key that fits into sockets in spindles of the catches turns back the spring catches.

23,841.—A BRAKE FOR USE WITH CRANES: *F. B. Reid.*—The contrivance consists of an especial form of Weston's brake which shall automatically control the load's descent. The driving pinion is mounted upon a sleeve which is screwed on to the main shaft, friction discs keyed to the pulley and the sleeve respectively are placed between the two end caps. As the shaft begins to revolve the caps approach one another, thereby causing the brake to operate by locking the shaft, the caps, the pulley, and the sleeve together, whilst the load is restrained from falling too soon by means of the differential band brake. The brake is freed and the load descends, when the shaft is turned accordingly, until the driving-pinion's rotation causes the brake to act again.

23,939.—BEVELS: *C. D. Bevan.*—Of a right-angled blade one side is marked with inches, and the other with feet, to a scale of one inch to the foot in each case, a cross-stock made of two flanged parts has distance-pieces at its ends which form a slot along nearly its entire length, the flanges are marked with scales that correspond with those upon the arms of the blade, which is to be clamped in any desired position by means of screw clips that move in the slot of each piece of the stock.

23,944.—GLAZING TILES, &c.: *W. & F. Burton.*—Tiles, plaques, &c., are fastened to a wheel's rim and then passed through a vessel which contains the glazing-solution, a brush or scraper, held upwards with a spring and retained at the required distance from the tile by means of cams that act upon the arms of the scraper, removes all superfluous glaze; a rod or spindle of the spring clip that holds the tile upon the wheel engages with a sloped surface or cam and so automatically frees the dipped tile as it is brought in front of the delivery board, an overflow pipe serves to regulate the level of the glaze which may also be agitated by the revolving wheel.

23,961.—TESTING LIGHT IN WORKSHOPS, SCHOOLS, &C.: *H. Cohn.*—The apparatus consists of a test-board which is to be viewed through a set of grey or smoke-coloured glasses arranged upon pivots so that they can be turned out of the way with finger-pieces, the data required are supplied by the number of glasses through which the matter upon the test-board is read by the observer.

23,966.—MIXING CEMENT, CONCRETE, MORTAR, &C.: *F. B. Gilbreth.*—The bottom of an inclined trough is closed with a plate at the top, and the bottom is shaped into a receiver whose mouth can be closed with a shovel, a series of bars is laid across the trough's front, and within it is set a range of cross-bars with cross-shelves, sloping downwards, the component parts of the mortar, &c., are thrown into a hopper at the higher end of the trough, and water is admitted through a spray pipe fixed a short distance below the grating of the hopper.

23,981.—WATERPROOF AND ACID-PROOF COMPOUNDS: *F. H. W. Stringfellow.*—A composition is made of ground glass, pumice, flint, and similar materials mixed with pitch, shellac, bitumen, india-rubber, or other binding agents and, it may be, a fibrous organic material such as peat-fibre, paper, &c., or an inorganic material such as asbestos. The compound is described as being serviceable for coating metal, wood, stone, brick, paper-boards, &c., as well as for electrical purposes, for making cisterns, tanks, and tubing, for lining and coating pipes and tubes, and for many similar objects.

24,002.—ACETYLENE: *L. Troubétzkoy.*—Within an open cylindrical casing, enlarged at its top and having a partition across its lower end, is placed a tubular holder which encloses an auxiliary container, inside which is a set of carbide holders which fit the one within the one beneath it. The annular space between the outer casing and the tubular holder contains water, into which dips the open end of a tubular casing fitted with supporting brackets (to rest upon the enlargement of the outer casing) and a partition which forms an upper water-chamber, from which water passes through a bent pipe (fitted with an outside valve) into the topmost carbide holder, A projection from the hanging rod of the bell of the gasometer acts as the bell rises upon a curved rod so as to regulate the supply of water through the outside valve of the bent pipe already mentioned. For re-charging the carbide-holders the outlet valve on the gas-pipe is closed, and the tubular casing is lifted up.

24,007.—BURNERS FOR INCANDESCENT GAS: *L. Jacquinet.*—The mixing tube, shaped somewhat like an hour glass, is mounted upon the nozzle by a lock nut, so as to allow a variation in the supply of air, the tube's upper part is closed with a spreader in the shape of two cones joined at their bases, the admixture of gas and air impinging upon the lower cone. The upper cone serves to elongate the flame, and a pilot jet may be furnished by means of a pipe to lead from the gas-fitting underneath a chamber in which is a valve that will remain closed until a full pressure of gas is obtained.

24,071.—HINGED SLIDING SASHES: *McCall's Sliding-Hinge Window Company, & W. McCall.*—Plates that engage with clips fastened to the frame hold within their channels the strips to which the balance-weight cords are secured, each sash is hinged to one of the strips, whilst to the other strip is fastened a short angle-plate for engagement with another similar plate upon the other side of the former strip. For swinging the window inwards upon its hinges a plate is turned up, the plate being hinged on to the frame and capable of moving within a right angle. This plate is stopped by the latter strip when the window is raised, and the two angle plates become disengaged when the sash is lifted still higher.

MEETINGS.

FRIDAY, MARCH 16.

Architectural Association (Discussion Section).—Mr. W. E. Dobson on "The Church of St. Francis, Assisi. A Study in Colour Decoration." 7 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. Charles Jones on "Scavenging, Disposal of House Refuse." 8 p.m.

Institution of Civil Engineers.—Students' visit to the Cathedral Works in progress at Ashley-place, Westminster. Assemble at the works at 2.30.

SATURDAY, MARCH 17.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

Royal Institution.—The Right Hon. Lord Rayleigh on "Polarised Light." III. 3 p.m.

People's Palace Architectural Society.—Mr. Tanner on History of Home Drainage." 7.30 p.m.

British Institute of Certified Carpenters.—Visit to the Catholic Cathedral, Westminster, by permission of his Eminence Cardinal Vaughan. Meeting at Archbishop's House, Carlisle-place, at 3.30 p.m.

MONDAY, MARCH 19.

Royal Institute of British Architects.—(1) A special general meeting to confirm, as required by Clause 33 of the Charter, the resolutions respecting changes in By-laws 25, 29, and 30, passed at the special general meeting of March 5. (2) The tenth general meeting (ordinary) of the session to read papers on "Ancient Lights" by Messrs. J. Fletcher Moulton, Q.C., M.P., F.R.S., J. Douglass Mathews, and Beresford Pite. 8 p.m.

Society of Arts (Cantor Lectures.)—Mr. E. Sanger Shepherd on "Photography of Colour." III. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. Reginald Dudfield, M.A., on "The Practical Duties of a Sanitary Inspector." 8 p.m.

Liverpool Architectural Society. — Messrs. E. C. Aldridge and A. W. Street on "Local Building Stones." 6 p.m.

Leeds and Yorkshire Architectural Society.—Election of officers. Annual report. 6.30 p.m.

TUESDAY, MARCH 20.

Institution of Civil Engineers.—(1) Mr. F. W. Bidder on "The Great Central Railway Extension—Northern Division;" (2) Mr. F. Douglas Fox on "The Great Central Railway Extension—Southern Division." 8 p.m.

Royal Victoria Hall, Waterloo-road.—Professor Frank Clowes on "Nature's Scavengers." 8.30 p.m.

Builders' Clerks' Benevolent Institution.—Twenty-second annual dinner, King's Hall, Holborn Restaurant. 6.45 p.m.

Architectural Association of Ireland.—Mr. G. M. Ross, M.A., on "Domestic Water Supply." 8 p.m.

WEDNESDAY, MARCH 21.

Society of Arts.—8 p.m.

British Archæological Association. — Mr. Edward Lovett on "Records and Accounts by Wooden Tallies." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Factory and workshop legislation as it affects the Sanitary Inspector. 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Architectural Association of Ireland.—Visit to the Dolphin's Barn Brick Company's works. 3 p.m.

THURSDAY, MARCH 22.

Institution of Electrical Engineers.—Mr. E. J. Wade on "Storage Battery Problems." 8 p.m.

The Institution of Mechanical Engineers.—(1) Adjourned discussion on the two following papers:—"Improvements in the Longworth Power-hammer," by Mr. Ernest Samuelson; and "Portable Pneumatic Tools," by Mr. Ewart C. Amos. (2) Mr. B. Donkin on "An Improved Glass Revealer, for Studying Condensation in Steam-Engine Cylinders and Rendering the Effects Visible." 8 p.m.

FRIDAY, MARCH 23.

Architectural Association.—(1) Special meeting to confirm some verbal alterations in the by-laws. 7 p.m. (2) Mr. H. C. Corlette on "The Decoration of Churches." 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. J. W. Cross on "The Development of the Modern Locomotive Engine." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Lecture by Mr. W. Hunting. 8 p.m.

Glasgow and West of Scotland Architectural Craftsmen's Society.—Mr. Alex. Davie on "The Practice of Measuring." 8 p.m.

SATURDAY, MARCH 24.

People's Palace Architectural Society.—Visit to St. Paul's Cathedral.

Royal Institution.—The Right Hon. Lord Rayleigh, M.A., on "Polarised Light." IV. 3 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage Outfall Works, Barking. 3 p.m.

Edinburgh Architectural Association.—Visit to Donibristle House and Grounds and small house in grounds.

Dundee Institute of Architecture.—Lecture by Mr. A. M. S. Richardson. 7 p.m.

PRICES CURRENT OF MATERIALS:

WOOD.*

Per Petersburg standard hundred.

	£	s.	d.	£	s.	d.
White Sea: first yellow deals	17	10	0	23	0	0
Second do.	16	0	0	17	10	0
Third do.	13	0	0	14	10	0
Battens, 40s., 30s., and 15s. less respectively.						
Petersburg: first yellow deals	15	0	0	17	10	0
Second do.	12	10	0	13	10	0
Battens, 30s. and 20s. less respectively.						
Petersburg, white deals	12	0	0	14	10	0
Do. white battens	9	10	0	11	0	0
Riga, white deals	10	0	0	11	0	0
Swedish mixed yellow deals	16	0	0	21	0	0
Third do.	14	0	0	17	0	0
Fourth do.	12	10	0	13	10	0
Fifth do.	11	10	0	12	10	0
Battens, 30s., 20s., and 10s. less respectively.						
Whitewood, 10 to 20 per cent. less.						
Finnish unsorted yellow deals	11	0	0	11	10	0
Battens, 10s. and 5s. less respectively.						
Whitewood, 5 to 10 per cent. less.						
Norwegian second yellow battens	8	0	0	8	10	0
Third do.	7	15	0	8	0	0
Fourth do.	7	10	0	7	15	0
Whitewood, 10s. less.						
Danzig, Crown Deck deals, per 40 ft. 3 in.	0	15	0	1	5	0
Brack	0	12	0	1	0	0
St. Lawrence Pine deals, &c., per P.S.H.:—						
1st, Bright and Dry, regular sizes	21	0	0	28	0	0
" " oddments	14	0	0	22	0	0
2nd " regular sizes	16	0	0	18	10	0
" " oddments	11	0	0	15	0	0
3rd " regular sizes	10	0	0	11	0	0
" " oddments	8	10	0	9	10	0
4th " regular sizes	9	0	0	10	0	0
" " oddments	8	0	0	9	0	0
St. Lawrence Spruce deals, &c.						
First, regular sizes	10	10	0	13	0	0
Second "	9	15	0	10	5	0
Third "	9	10	0	9	15	0
Fourth "	9	0	0	9	10	0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.						
New Brunswick Spruce deals, &c.	9	10	0	10	10	0
Oddments, battens, and fourths	9	0	0	9	10	0
United States pitch pine planks and boards	11	0	0	15	10	0
Prepared Boards, per square						
1¼ by 6½ and 7 in. 1st yellow		11	0		16	0
" " 2nd "		10	6		13	0
1 by 6½ and 7 in. 1st "		10	0		12	0
" " " white		9	6		10	0
" " 2nd yellow		9	0		11	0
" " " white		8	0		9	0
¾ by 6½ & 7 in. 1st & 2nd yellow		7	9		9	6
" " " white		7	6		8	6
¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)		8	6		9	6
¾ by 6½ and 7 in. 2nd yellow and white (ditto)		7	6		8	6
½ by 6½ and 7 in. 1st yellow and white (ditto)		6	6		7	6
½ by 6½ and 7 in. 2nd yellow and white (ditto)		6	0		7	0
Narrower widths at 10 per cent. less.						
3rd quality at 15 per cent. less than 2nd.						
Danzig and Memel Fir Timber— per load						
Best middling	3	15	0	4	0	0
Good middling and Second	3	5	0	3	10	0
Common middling	3	0	0	3	5	0
Undersized	3	0	0	3	5	0
Swedish and Norwegian Balks	2	10	0	2	15	0

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

PRICES CURRENT (*Continued*).

	£ s. d.	£ s. d.
Baltic Oak Timber—		
Dantzig and Stettin—Large	3 15 0	4 15 0
Small	3 0 0	3 15 0
Quebec Timber per load		
Yellow Pine	5 0 0	6 10 0
Oak	4 15 0	6 15 0
Elm	4 5 0	4 10 0
Ash	3 10 0	4 5 0
Birch	3 7 6	5 15 0
New Brunswick, &c., Birch	3 5 0	4 0 0
American Pitch Pine Timber	3 17 6	4 10 0
Wainscot, per log, 18 cubic ft.—		
Crown (Eng. & Dutch) nominal	3 10 0	4 12 6
Brack nominal	2 15 0	3 15 0
Lathwood, per cubic fathom—		
Petersburg	4 0 0	6 10 0
Riga and Dantzig	4 10 0	5 10 0
Norway Poles, per ft. run	0 0 1	0 0 1½
Oak Staves, per mille full size pipe		
Memel, Crown	220 0 0	230 0 0
Brack	190 0 0	200 0 0
Dantzig	165 0 0	175 0 0
Bosnia, single Barrel (nominal)	28 0 0	30 0 0
United States, Pipe	37 10 0	45 0 0
Hogshead, extra heavy and double extra	30 0 0	35 0 0
Indian Teake per load	11 10 0	16 10 0
British Guiana Greenheart	0 0 0	8 0 0
Mahogany, per foot superficial—		
Honduras, cargo average	0 0 4½	0 0 5½
Nicaragua, do.	0 0 4½	0 0 5½
Tabasco, do.	0 0 4½	0 0 6
Mexican, do.	0 0 4	0 0 4½
Panama, do.	0 0 3½	0 0 4
African, do.	0 0 3½	0 0 5
Cuba, do.	0 0 6	0 0 8
St. Domingo, do.	0 0 5	0 0 7½
Do. Curls (good to prime)	0 0 9	0 1 3
Walnut, American (logs)	0 3 0	0 5 0
Do. do. (planks and boards)	0 2 0	0 7 6
Italian, per foot superficial	0 0 3	0 0 7½
Black Sea, per ton	6 0 0	12 0 0
Satin Walnut (logs) per foot cube	0 1 0	0 1 6
,, (planks and boards)	0 1 9	0 3 0
Sequoia (Californian redwood), per foot cube	0 1 9	0 2 0
Whitewood, American (logs)	0 1 4	0 1 9
,, ,, (planks and boards)	0 1 9	0 2 9
Quartered oak ,, ,, ,,	0 2 3	0 4 0
Kauri pine (logs)	0 1 9	0 2 0
,, ,, (planks)	0 2 3	0 2 9
Jarrah (planks)	0 2 0	0 2 3
Lancewood spars each, fresh and large	0 5 0	0 7 0
Lancewood spars, ordinary to fair	0 3 0	0 4 0
Degame spars	0 8 0	0 10 0

METALS.

IRON—Pig, in Scotland ton	3 10 4	0 0 0
Bar, Welsh, in London	9 0 0	9 15 0
Do. do. at works in Wales	8 10 0	9 0 0
Do. Staffordshire, in London	9 15 0	11 15 0
COPPER—British cake and ingot	81 15 0	82 5 0
Best selected	82 5 0	83 0 0
Sheets, strong	85 0 0	86 0 0
Chili bars	78 10 0	0 0 0
YELLOW METAL lb.	6½d.	7d.
LEAD—Pig		
Spanish ton	16 15 0	0 0 0
English Com. Brands	16 17 6	0 0 0
Sheet, English, 6 lbs. per sq. ft. and upwards	18 7 6	0 0 0
Pipe	18 17 6	0 0 0
ZINC—English sheet ton	27 0 0	0 0 0
Vieille Montagne	28 10 0	0 0 0
Spelter	21 15 0	22 0 0
TIN—Straits	140 0 0	0 0 0
Australian	140 0 0	140 10 0
English Ingots	144 0 0	145 0 0
Banca	0 0 0	0 0 0
Billiton	0 0 0	0 0 0

OILS, &c.

Raw Linseed Oil in pipes, per ton	26 10 0	0 0 0
,, ,, ,, in drums, per gal.	0 2 4	0 0 0
Boiled ,, ,, in pipes, per ton	28 10 0	0 0 0
,, ,, ,, in drums, per gal.	0 2 6	0 0 0
TAR—Stockholm barrel	1 6 6	0 0 0
Archangel	1 0 0	0 0 0
Turpentine, in barrels, per cwt.	2 2 0	0 0 0
,, in drums, per gal.	0 3 4	0 0 0
Genuine Ground English White Lead	25 10 0	0 0 0
Red Lead	22 0 0	0 0 0
Best Linseed Oil Putty, per cwt.	0 8 0	0 0 0

BRICKS, &c.

	s. d.	
Hard Stocks	31 0	per thousand alongside, in river.
Rough Stocks and Grizzles	29 0	,, ,, ,, ,,
Smooth Bright Facing Stocks	58 0	,, ,, ,, ,,
Shippers	42 0	,, ,, ,, ,,
Flettons	29 6	,, ,, at railway depôt.
Red Wire Cuts	34 0	,, ,, ,, ,,
Best Fareham Red	71 6	,, ,, ,, ,,
Best Blue Pressed Staffordshire	86 0	,, ,, ,, ,,
Best Stourbridge Fire Bricks	84 0	,, ,, ,, ,,
Best White Glazed Stretchers	260 0	,, ,, ,, ,,
Headers	240 0	,, ,, ,, ,,
Quoins and Bull-nose	340 0	,, ,, ,, ,,
Double Headers	320 0	,, ,, ,, ,,
Best Dipped Salt Glazed Stretchers and Headers	240 0	,, ,, ,, ,,
Quoins and Bull-nose	280 0	,, ,, ,, ,,
Double Headers	280 0	per thousand at railway depôt.
Seconds Quality White and Dipped Salt Glazed	40 0	per thousand less than best.

PRICES CURRENT (*Continued*).

	s. d.	
Thames and Pit Sand	7 0	per yard, delivered.
Thames Ballast	6 6	,, ,,
Best Portland Cement	34 0	per ton ,,
Best Ground Blue Lias Lime	23 0	,, ,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. od. per yard, delivered.
Stourbridge Fire-clay in sacks, 31s. 6d. per ton at rly, dpt.

STONE.

		s. d.	
Ancaster in blocks		2 0	per ft. cube, deld. rly. depôt.
Bath	,,	1 7	,, ,,
Beer	,,	1 6½	,, ,,
Grinshill	,,	1 10	,, ,,
Brown Portland in blocks		2 2	,, ,,
Dadley Dale	,,	2 1½	,, ,,
Red Corsehill	,,	2 5	,, ,,
Red Mansfield	,,	2 4½	,, ,,
Hard York	,,	2 10	,, ,,

		s. d.	
,, ,,	6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2 7	per ft. super. at rly. depôt.
,, ,,	6 in. Rubbed Ditto	2 10½	,, ,,
,, ,,	3 in. sawn both sides slabs (random sizes)	1 3	,, ,,
,, ,,	3 in. self-faced Ditto	0 9	,, ,,

SLATES.

in.	in.	£ s. d.	
20×	10 best blue Bangor	11 5 0	per 1000 of 1200 at ry. dep.
,,	best seconds ,,	10 15 0	,, ,,
16×	8 best ,,	6 2 6	,, ,,
20×	10 best blue Portmadoc	10 18 0	,, ,,
16×	8 ,, ,,	6 0 0	,, ,,
20×	10 best Eureka unfading green	11 2 6	,, ,,
16×	8 ,, ,,	6 15 0	,, ,,
20×	10 Permanent green and Sedan green	10 0 0	,, ,,
16×	8 ,, ,,	5 12 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	40 6	per 1,000 at rly. depôt.
Hip and valley tiles	3 6	per doz. ,, ,,
Best Broseley tiles	47 6	per 1,000 ,, ,,
Hip and valley tiles	4 0	per doz. ,, ,,

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 1.—By WHEELER & SON (at Chelsea).

Chelsea.—18, Park-walk, u.t. 59½ yrs., g.r. 7*l.* r. 55*l.* £600
Pimlico.—19, Union-st., u.t. 21 yrs., g.r. 4*l.* 4s., r. 29*l.* 220
25 and 26, West-st., r. 58*l.*; also i.g.r. 14*l.* 10s., u.t. 23¾ yrs., g.r. 15*l.*, with reversion 570

By WORSFOLD & HAYWARD (at Dover).

Dover, Kent.—16, Maison Dieu-rd., u.t. 60 yrs., g.r. 5*l.* 5s. 500
41, Bridge-st., f. 225
2, Liverpool-st., u.t. 32 yrs., g.r. 1*l.* 4s. 325

March 2.—By BRODIE, TIMBS, & Co.

Islington.—68, Arlington-st., u.t. 36½ yrs., g.r. 5*l.* 10s., r. 38*l.* 350

By HUNTER & HUNTER.

Kensington.—1, Pembridge-sq., f. 5,900
South Kensington.—9, Cornwall Mews South, u.t. 61¼ yrs., g.r. 18*l.* 110

March 5.—By CHADWICK & SONS.

East Molesey, Surrey.—1 and 2, Bridge-rd., c., r. 65*l.* 1,260

By Messrs. KEMSLEY.

Brentwood, Essex.—Queen's-rd., the Corn Mill and 2 a., f. 1,260
Queen's-rd., three enclosures of building land, 8 a. 1 r. 20 p., f. 1,160

By NOTLEY & Co.

Norwood.—20, Court-rd., u.t. 76 yrs., g.r. 13*l.* .. 1,000
Pimlico.—109, Alderney-st., u.t. 32 yrs., g.r. 8*l.* 10s., r. 78*l.* 580

By FRED. THOMPSON & SON (on Premises).

Blackpool, Lancs.—Church-st., &c., the Empire Theatre of Varieties and Music Hall, area 20,095 ft., f. 26,000

By E. W. MARGETTS (at Willesden Green).

Harrow-on-the-Hill.—Welldon-cres., two plots of building land, f. 155
March 6.—By DEBENHAM, TEWSON, & Co.
Stratford.—Broadway, f.g.r. 5*l.*, reversion in 95 yrs. 600
Frederick-st., &c., f.g.r. 220*l.*, reversion in 57 yrs. 7,900
Brighton, Sussex.—37, West-st., f., r. 175*l.* 3,750

By BEALE & CAFFS.

Notting Hill.—5, Chapel-rd., u.t. 65 yrs., g.r. 8*l.* 8s., e.r. 48*l.* 450
Bayswater.—83, Portobello-rd., u.t. 39½ yrs., g.r. 5*l.*, r. 42*l.* 330
49 and 50, Archer-st., u.t. 44 yrs., g.r. 14*l.* 14s., r. 127*l.* 950
82, Ledbury-rd., u.t. 47 yrs., g.r. 8*l.* 8s., r. 50*l.* 410
Notting Hill.—137, Blenheim-cres., f., e.r. 75*l.* .. 1,200
Vernon Mews, a range of stabling, with engine house, &c., u.t. 51 yrs., g.r. 5*l.* r. 60*l.* 550
Kensington.—82, 88, 90, 92, 100, 102, 108, and 110, Chesterton-rd., u.t. 75 yrs., gr. 72*l.*, r. 353*l.* 14s. (in lots) 3,190

By C. W. DAVIES & SON.

Harringay.—119, Seymour-rd., u.t. 96 yrs., g.r. 7*l.*, r. 35*l.* 380
Clerkenwell.—75, Myddleton-st., u.t. 11½ yrs., g.r. 25*l.*, e.r. 60*l.* 135
Hackney.—43, Darnley-rd., u.t. 37 yrs., g.r. 7*l.* 10s., e.r. 55*l.* 380
Holloway.—9 and 13, Sonderburg-rd., u.t. 63 yrs., g.r. 18*l.*, r. 83*l.* 755

By FLEURET, SON, & ADAMS.

Mile End.—14 to 19, Lincoln-st., f., r. 208*l.* 3,150
Stoke Newington.—34, Bouverie-rd., u.t. 57¾ yrs., g.r. 7*l.* 10s., e.r. 45*l.* 470
Margate, Kent.—19, Vicarage-cres., f., r. 50*l.* .. 930
Holloway.—47, Hartham-rd., u.t. 56¼ yrs., g.r. 7*l.*, e.r. 50*l.* £560

By W. B. HALLETT.

Stoke Newington.—33, Lordship Pk., u.t. 73¼ yrs., g.r. 10*l.* 10s. 1,500

By VICTOR VAUGHAN.

Catford.—Ravensbourne Pk., Brook Lodge and ¾ of an acre, f. 1,350
Bayswater.—Ledbury-rd., i.g.r. 20*l.*, u.t. 43½ yrs., g.r. 7*l.* 230
Fulham.—46, Fernhurst-rd., u.t. 89 yrs., g.r. 6*l.*, r. 38*l.* 400

By BOYTON, PEGRAM, & BUCKMASTER (at Walham Green).

Putney.—22 and 23, Mexfield-rd., u.t. 91 yrs., g.r. 12*l.*, r. 66*l.* 590
Hammersmith.—31, Brecon-rd., u.t. 87 yrs., g.r. 4*l.*, r. 35*l.* 2s. 275

March 7.—By LEOPOLD FARMER.

Kilburn.—10 and 12, Harvist-rd., u.t. 91½ yrs., g.r. 24*l.*, r. 110*l.* 1,050
Hampstead.—209, Adelaide-rd., u.t. 52½ yrs., g.r. 10*l.*, r. 63*l.* 630

By HAROLD GRIFFIN.

Battersea.—195, York-rd., u.t. 25 yrs., g.r. 5*l.*, r. 50*l.* 400
2, Kersley-st., u.t. 77 yrs., g.r. 8*l.*, r. 34*l.* 345
2, Orkney-st., u.t. 62 yrs., g.r. 4*l.*, r. 30*l.* 210
99, Battersea Park-rd., f., r. 36*l.* 8s. 365

By DOUGLAS YOUNG & Co.

Wimbledon.—Pelham-rd., Dale House, f., e.r. 75*l.* 1,120
Clapham.—62, Studley-rd., u.t. 37½ yrs., g.r. 12*l.*, e.r. 48*l.* 525

By BLAKE & CARPENTER (at Croydon).

Addiscombe.—Lebanon-rd., 58 plots of building land, f. (in lots) 5,778
Croydon.—Coombe-rd., 3 plots of building land, f. 778

Contractions used in these lists.—F.g.r. for freehold ground-rent; i.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

TO CORRESPONDENTS.

J. D. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABINGDON.—For the supply of Hartshill stone (3,200 tons), for the Rural District Council :—

Jee's Hartshill Granite Co., Hartshill, per ton unbroken	9s. 6d. to 10s. od.
Ditto, per ton broken	11s. od. to 11s. 9d.
Judkin's Exors., Nuneaton, per ton unbroken	9s. 9d.
Ditto, per ton broken	11s. 3d.
Boon & Son, per ton unbroken	9s. 11d.
Ditto, per ton broken	11s. 8d.
Hartshill Quarry Co., Hartshill, per ton unbroken	8s. 9d. to 9s. 6d.
Ditto, per ton broken	10s. 6d. to 11s. 3d.

ABINGDON.—For the supply of Hartshill stone and flints for the Culham Rural District Council :—

Hartshill Quarry Co., Atherstone, per ton unbroken	10s. 3d. to 10s. 6d.
Do. per ton broken	11s. 9d. to 12s.
Jee's Granite, Lt., Atherstone, per ton unbroken	10s. to 10s. 2d.
Do. per ton broken	11s. 2d. to 11s. 6d.
W. D. Boon & Son, Nuneaton, per ton unbroken	9s. 6d.
Do. per ton broken	11s. 0s.
C. Abell, Nuneaton, unbroken	9s. 9d.
Do. broken	11s. 3d.

BROMLEY (Kent).—For sewering, levelling, &c., Walter's-yard, for the Urban District Council :—

W. Wadey £502 2 10	Mowlem & Co. Westminster* £458 0 0

BURSLEM.—For the erection of laundry, &c., Chell, for the Wolstanton and Burslem Guardians. Mr. W. H. Walley, architect, Queen-street, Burslem. Quantities by architect :—

W. Cooke	£1,854	Grant & Sons	£1,590
Bennett Bros.	1,700	C. W. Machin	1,498
Yorke & Goodwin	1,626	J. Cooke	1,490
J. H. Ford	1,616	J. J. Longden, Burslem*	1,469
C. Smith	1,599		

[*See also page 279.*

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Public Library, Reading Room, &c.	I. of Wight C.C. Tech. Ed. Com.	50*l.* and 50*l.*	April 30
*Schools	Governors, Bury Grammar Schools	100*l.*; 60*l.*; 30*l.*	June 1

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
Cottage, Bala, North Wales	Great Western Railway Company	G. K. Mills, Paddington Station, W.	Mar. 20
Two Cottages, Yealmpton, Devon	do.	do.	do.
Bathing Houses, &c., East of Promenade Pier	Plymouth Corporation	J. Paton, Borough Engineer, Municipal Offices	do.
Granite, &c. (1,200 tons)	Downham Market (Norfolk) R.D.C.	H. Wayman, Workhouse, Downham Market	do.
Broken Granite (2,000 tons), &c.	Dover Town Council	E. W. Knocker, Castle Hill House, Dover	do.
Outfall Sewer, Burn-road	West Hartlepool Corporation	J. W. Brown, Borough Engineer, Town Hall	do.
Granite and Gravel	Sculcoates (Hull) R.D.C.	A. Greaves, Surveyor, Hessle, Hull	do.
Alterations to Angel Hotel, Grantham	.....	J. Hutchinson, Manthorpe Lodge, Grantham	do.
*Making-up Roads	Lewisham Board of Works	Surveyor's Department, Town Hall, Catford	do.
*Works and Materials	do.	Offices, Town Hall, Catford	do.
Shops and Stores, Berry-street, Belfast	.....	H. Seaver, Architect, 128, Royal-avenue, Belfast	Mar. 21
Additions to Hall, Rosemary-street, Belfast	.....	Young & Mackenzie, Architects, Belfast	do.
Lodge at Hospital	Blaby & Wigston Joint Hosp. Bd.	R. J. Stephens, Architect, Belvoir-street, Leicester	do.
Schools, Cacrau, Maesteg	Cwmdu School Board	E. W. Burnett, Architect, Tondu, Wales	do.
Road Stone (3,220 tons)	Leamington R.D.C.	C. H. Passman, 48, Bedford-street, Leamington	do.
Surveyor's Materials	Reading Corporation	J. Bowen, Civil Engineer, Town Hall	do.
*Paving Streets, &c.	St. Saviour's Board of Works	Surveyor, Offices, Emerson-street, Bankside, S.E.	do.
Alterations to Church & Manse, Sixmilecross, Lon'derry	.....	M. A. Robinson, Architect, Richmond-street, Londonderry	Mar. 22
Pair of Villas, Ovenden, near Halifax	.....	M. Hall, Architect, 29, Northgate, Halifax	do.
Foundations, Engine-room, &c.	Plymouth Corporation	J. Paton, Borough Engineer, Municipal Offices	do.
Drill Hall, Edkin-street, Workington	.....	W. G. Scott & Co., Architects, Victoria Buildings, Workington	do.
Electric Light Station, Rainhill, Lancs.	Lancashire Asylums Board	J. Gornall, The Asylum, Rainhill	do.
Surveyor's Materials	Towcester R.D.C.	W. Sheppard, Surveyor, Blakesley, Towcester	do.
Swimming Baths, &c.	Cork Corporation	H. A. Cutler, Civil Engineer, Municipal Buildings, Cork	do.
Six Houses, &c., Cemetery-road	Darwen Industrial Co-op. Society	J. B. Thornley, Architect, 45, Market-street, Darwen	Mar. 23
Warehouse, Bradford-road, Dewsbury	E. Townsend & Co.	F. W. Ridgway, Architect, Bond-street, Dewsbury	do.
Business Premises, South-street, Elgin, N.B.	W. Smith	Sutherland & Jamieson, Architects, Elgin	do.
Farm Buildings, Abbey Town, Carlisle	Mrs. Wise	G. Armstrong, Architect, 24, Bank-street, Carlisle	do.
Road Metal, &c.	Eastbourne R.D.C.	J. H. Evans, St. Albans, Polegate, Eastbourne	do.
Villa, Banff-road, Keith, N.B.	Mr. A. W. Mair	J. Alcock, Architect, Keith	do.
Public Hall, &c., Abergwynfi, Wales	.....	T. Bevan, 13, Waen-street, Abergwynfi	do.
Additions to Chapel, Blaina, Mon.	.....	W. S. James, 77, High-street, Blaina	Mar. 24
Surveyor's Materials	Padiham U.D.C.	J. Gregson, Civil Engineer, Council Chambers, Padiham	do.
Schools, Gowran, Ireland	Board of Public Works	Secretary, Board of Works, Dublin, Ireland	do.
*Painting the Pavilion, &c.	Brighton County Council	Borough Engineer, Town Hall, Brighton	Mar. 26
*General Builder's Work, Electric Car Shed	Manchester Corporation	General Manager, Tramways Department, Town Hall, Manchester	do.
Almshouses, Gravesend	Trustees of Pinnock's Charity	Farrow & Nisbett, Architects, 7, New-court, W.C.	do.
Road Works	Bridport R.D.C.	J. W. S. Bartlett, Surveyor, West Bay-road, Bridport	do.
Fire Station, &c.	Bournemouth Corporation	F. W. Lacey, Borough Engineer, Town Hall	do.
*Workhouse Infirmary, Retford	East Retford Guardians	Eyne & Southall, Architects, Chapelgate, Retford	do.
*Alterations to Waterworks Offices	Brighton County Council	Borough Engineer, Town Hall, Brighton	Mar. 27
Cemetery Chapels, &c., Shirebrook, Notts.	Pleasley Parish Council	Vallance & Westwick, Architects, Mansfield	do.
Sewerage Works, Market-square	Dartmouth U.D.C.	T. O. Veale, Surveyor, Castle View House, Dartmouth	do.
Electric Lighting Plant	Dartford U.D.C.	W. C. C. Hawtayne, Engineer, 9, Queen Street-place, E.C.	do.
*Road Materials	Bromley U.D.C.	The Clerk, Council Offices, Bromley	do.
*Widening, &c., of Burnt Ash-lane and Nichol-lane	do.	The Surveyor, Council Offices, Bromley	do.
*Laying-out and Levelling Recreation Grounds	do.	do.	do.
*Road Making and Paving Works	Willesden D.C.	O. Claude Robson, Engineer, Public Offices, Kilburn	do.
*Wood Paving	Hackney Vestry	Chief Surveyor, Town Hall, Hackney	Mar. 28
*Schools	Middlesbrough School Board	J. Mitchell Bottomley, Architect, 28, Albert-rd., Middlesbrough	do.
*Repairs and Alterations to School, Lower Clapton-rd.	Shoreditch Guardians	F. J. Smith, F.R.I.B.A., Parliament Mansions, Victoria-st., S.W.	do.
*Cleaning and Painting Police Stations, &c.	Brighton County Council	Borough Engineer, Town Hall, Brighton	do.
*Repairing and Painting Race Stand, &c.	do.	do.	do.
*Road Making, Muswell Hill	.....	Vigers & Co., 4, Frederick's-place, Old Jewry, E.C.	do.
Buildings at Gasworks, Bracebridge	Lincoln Corporation	R. A. MacBrair, Surveyor, Corporation Offices	do.
Workhouse Mortuary, Lyminge	Elham Union Guardians	R. Lonergan, Saltwood, Hythe	do.
Lodge, &c., Mount Sion Grove	Tunbridge Wells Corporation	T. E. W. Mellor, Civil Engineer, Town Hall	do.
Paving Works	Lymington (Hants,) Corporation	I. Pym-Jones, Borough Engineer, Town Hall	Mar. 31
Residence, High-street, Solva, Pembroke	.....	D. E. Thomas, Architect, Haverfordwest	do.
Chapel, Capel Hendre, Ammanford	.....	J. W. Jones, Gwily House, Llandilo	April 1
Whinstone. Slag, &c.	Stockton-on-Tees R.D.C.	W. Burton, Surveyor, Billingham, Stockton	April 2
Additions to Schools	South Gosforth School Board	W. Bedlington, Architect, 23, Eldon-square, Newcastle	do.
*Removal of Residue from Refuse Destructor	Shoreditch Vestry (Lighting Com.)	Chief Engineer, Coronet-street, Shoreditch, N.	April 3
*Broken Granite	Middlesex County Council	County Engineer, The Guildhall, Westminster, S.W.	do.
*Cartage of Granite and Gravel	do.	do.	do.
*Schools, Bowes-road, N.	Edmonton School Board	H. W. Dobb, Architect, 54, London-wall, E.C.	do.
Church, Islandmagee, Belfast	.....	Young & Mackenzie, Architects, Belfast	April 7
*Farm Buildings, Bexley, Kent	L.C.C. Asylums Committee	Committee Offices, 6, Waterloo-place, S.W.	April 9
*Artisans' Dwellings, Plaistow	West Ham Council	Borough Engineer, Town Hall, West Ham	April 10
Residence, Bramhall, Cheshire	.....	Empsall & Clarkson, Architects, 7, Exchange, Bradford	No date
*Block of Flats, Kennington-road	Lambeth Walcot Charity Trustees	Waring & Nicholson, Architects, 38, Parliament-street, S.W.	do.
*Baptist Church and Schools, Newcastle-on-Tyne	.....	G. Baines & Son, Architects, 5, Clement's-inn, W.C.	do.
Additions to Schools, Crumlin, Mon.	Mynyddislwyn School Board	R. L. Roberts, Architect, Abercarn	do.
Three Residences, High Land Estate, Brentwood	Messrs. E. F. & H. Landon	A. T. G. Woods, Architect, New-road, Brentwood	do.
Stabling, Stores, &c., Bury, Lancs.	Messrs. Davenport Bros. & Co., Ltd.	C. H. Openshaw, Architect, Fleet-street, Bury	do.
House, Stables, &c., Langley Mill, Notts.	Langley Mill Co-operative Society	S. Taylor, Nuttall, Notts.	do.
Additions to St. Margaret's School, Aberdeen	.....	A. Clyne, Architect, 113, Union-street, Aberdeen	do.
Drill Hall, Armoury, &c., Cwmbran, Mon.	.....	Swalwell & Creighton, Archt. Steam Packet Chmbrs. Newport, Mon.	do.
Farm Buildings, &c., Pool Hall, near Leeds	Mr. J. Yeadon	W. H. Beevers, Architect, 26, Bond-street, Leeds	do.
Hydropathic Establishment, Whitby	.....	W. H. Wood, Surveyor, 14, Park-square, Leeds	do.
Additions to Brewery, Brookside, Ashton-under-Lyne	Messrs. Gartside, Limited	B. T. Brierley, Civil Engineer, Lymm, Cheshire	do.
Six Houses, Melbourne-road, Carlisle	.....	J. Beaty, Old Post Office Court, Carlisle	do.
Chapel and Schools, Carlton, Nottingham	.....	R. Whitbread, Architect, Nottingham	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Surveyor of Corporate Property	Bath City Council	150*l.* per annum	Mar. 20
*Engineer and Chief Surveyor	Tottenham U.D.C.	600*l.* per annum	do.
*Clerk of Works	Whiston R.D.C.	3*l.* 3*s.* per week	Mar. 21
*Superintendent and General Clerk of Works	York Corporation	150*l.* per annum	Mar. 24
*Clerk of Works	Manchester School Board	3*l.* 3*s.* per week	do.
*Engineer, to act as Clerk of Works	LondonCty. Asylum, Horton, Epsom	3*l.* weekly	Mar. 26
*Surveyor	Farnborough U.D.C.	150*l.* per annum	April 4
*Builder's Clerk	H.M. Dockyard, Portsmouth	Not stated	No date
*Surveyor (Borough Engineer's Office)	Brighton Council	do.	do.

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv. vi. viii. x. & xxii. Public Appointments, pp. xixb. & xxii.

CARLISLE.—For the erection of wards and annexes at the House of Recovery. Messrs. Oliver & Dodgshun, architects, Carlisle :—

Building.—J. & R. Bell, Carlisle*	£1,500 0 0
Joinery.—James Hodgson, Carlisle*	458 9 6
Slating.—J. T. Kellett, Carlisle*	118 15 0
Plumbing.—Wm. Anderson, Glasgow and Carlisle*	268 0 0
Plastering.—Ferguson & Sons, Carlisle*	315 0 0
Painting and Glazing.—Hill & Sons, Carlisle*	40 0 0

CLAYTON-LE-MOORS.—For the execution of paving works, Whalley-road, for the Urban District Council. Mr. Arthur Dudgeon, Surveyor, Council Offices, Clayton. Quantities by the Surveyor :—

Exors. of A. Broadley	£735 0 0	John Miles, Burnley*	£669 3 4
Chadwick Bros.	685 0 0	Read & Sons	667 10 0

[The Council provides setts and cement.]

DORCHESTER.—For alterations and additions at the Great Western Hotel, for Messrs. Eldridge, Pope, & Co., Limited. Mr. A. L. T. Tilley, architect, 26, South-street, Dorchester :—

Davis & Son, Dorchester* £4,525

ENFIELD.—For making up Riley-road, &c., for the Urban District Council :—

Riley-road.		Elmore-road.	
T. Adams	£1,109	T. Adams	£648
W. Griffiths	960	W. Griffiths	548
G. J. Anderson	905	G. J. Anderson	522
E. J. Betts, Enfield Highway*	875	E. J. Betts, Elmore-road*	515

GATESHEAD.—For the erection of a rectory, St. John's, Gateshead Fell, for the Rev. J. Mitchell. Messrs. Joseph Potts & Son, architects, 57, John-street, Sunderland. Quantities by Mr. J. C. Christton, 57, John-street, Sunderland :—

J. B. Stott	£2,798 9 10	Draper & Son	£2,450 0 0
J. Bewley	2,623 0 0	W. Hall	2,311 12 2
Henderson & Wakefield	2,608 0 0	R. & J. Stephenson, Low Fell*	2,197 0 0

GLOUCESTER.—For the erection of two shops and offices, &c., Southgate-street, for the Corporation. Mr. A. J. Dunn, architect, 31, St. Michael-square, Gloucester. Quantities by Messrs. Vale & Kingsford, Gloucester :—

Bailey & Dean	£5,500	T. J. Williams	£4,422
Forse & Sons	5,460	A. & A. E. King	4,247
W. T. Nicholls	4,780	Collins & Godfrey, Tewkesbury†	4,058
W. Jones	4,530		

HARROGATE.—For the erection of peat baths, for the Corporation of Harrogate. Mr. William Bennett, architect. Quantities by architect :—

For Mason's, Excavating and Draining, Carpenter and Joiner's, Plasterer and Painter's Work.

Raworth & Allen	£629 0 0	Wray Bros.	£514 10 0
Thomas Linskill	515 10 0	Ledger, Harrogate*	507 2 8

Engineering and special work carried out by the Corporation £300

HARROGATE.—For draining, paving, &c., back road, near Hyde Park-road, for the Corporation. Mr. Samuel Stead, Borough Surveyor, Municipal Offices, Harrogate :—

John Pierson, 7, Mayfield-grove, Harrogate £164

HENDON.—For erecting the "Railway Tavern," Mill Hill, Hendon, for Messrs. M. A. Sedgwick & Co., the Brewery, Watford. Mr. Charles P. Ayres, architect, 14A, High-street, Watford :—

Wall & Co.	£3,739	Brightman	£3,230
Waterman	3,656	Martin, Wells, & Co.	3,200
Coleman	3,644	Olley & Co.	3,100
Mead & Burton	3,613	Dupont & Co., Watford and Colchester*	3,080
Turner, Limited	3,550	Critcher	2,967
Dove	3,395	Tonge	2,750
Webster & Cannon	3,348		
Wilson, Limited	3,342		
Patman & Fotheringham	3,271		

LARNE (Ireland).—For the supply of whinstone for the Urban District Council. Mr. W. Pinkerton, surveyor, Town Hall, Larne :—

P. McKeown, Larne ..... 2s. 2d. per ton.

[About 400 tons required.]

LEEDS.—For additions, &c., to Wesleyan Schools, Halton. Mr. Arthur Hiscoe, architect, 57, Holdforth-street, Wellington-road, Leeds :—

George Morritt, Halton, near Leeds .. £656 7 9

LEIGH-ON-SEA.—For making up North-street, Victoria-avenue. And Sea View-roads, for the Urban District Council. Mr. Frank E. Smee, surveyor, 12, West Smithfield, E.C., and Leigh-on-Sea :—

—	North-street.	Victoria-road.	Avenue-road.	Sea View road.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
W. Griffiths	676 9 1	638 7 9	724 11 5	612 11 2
W. Wadey	601 0 7½	604 15 4	688 19 1	590 13 6
T. Adams	577 8 11	555 8 4	653 15 6	538 1 5
W. H. Wheeler	496 8 2	494 2 4	596 19 2	474 4 2
A. J. Catley	483 16 3	486 1 8	537 13 0	465 14 7
J. & J. Jones	438 0 9	446 4 9	520 16 11	463 9 4
Burton & Jenner	—	549 17 11	630 9 10	522 4 3
Wm. Iles	394 15 4*	426 6 0*	505 1 9*	407 2 1*

LEYTON.—For removing and re-erecting a temporary school building and erecting a new temporary building, for the School Board. Mr. Wm. Jacques, architect, 2, Fencourt, E.C. :—

	Connaught-rd. New Temporary School.		*Park-rd.* Re-erection of Temporary School.	
Croggon & Co.	£1,607 10 0		Nil.	
Portable Buildings Co.	1,375 15 0		£812 10 0	
Priest & Son	1,141 0 0		654 0 0	
Hawkins & Co.	1,015 0 0		603 5 0	
W. Harbrow	998 10 0		587 0 0	
Mitson & Co.	935 0 0*		531 4 6	
F. J. Coxhead	Nil.		343 9 3*	

LITHERLAND (Lancs).—For the supply of Welsh macadam and granite chippings, for the Urban District Council. Mr. W. B. Garton, surveyor, 25, Sefton-road, Litherland :—

		per ton. s. d.
Kimshaw, Lupton, & Co.,	hand broken	7 9
Do.	machine broken	6 9
Do.	carting	1 6
Darbishires, Ltd.	hand broken	7 3
Do.	machine broken	7 3
Do.	carting	1 6
Carlingford Granite Co.	machine broken	7 0
Do.	chippings	6 0
Brundrit & Co., Liverpool and Penmaenmawr*	hand broken	7 6
Do.	machine broken	7 3
Do.	carting	1 6
Do.	¼ to ½ chippings	4 6
Do.	1 in. macadam	6 6

LONDON.—For alterations to premises Nos. 44 and 45, Broadway, Deptford, S.E., for Mr. Geo. Collins. Mr. John Jas. Downes, architect, 199, Lewisham High-road, New Cross, S.E. :—

S. J. Jerrard & Sons	£553 0	T. D. Leng	£529 0
		S. R. Best*	510 15

LONDON.—For the construction of public conveniences, Broadway, Ealing, for the Urban District Council. Mr. Charles Jones, C.E., Public Buildings, Ealing :—

Neave & Son	£1,940	Thomas & Edge	£1,674
J. Macklin	3,500	Clift Ford	2,391
Dickens, Ealing*	1,507	Finch & Co.	1,734

LONDONDERRY.—For the erection of walls, gates, &c., at the Faughanvale Presbyterian Church, for the Committee. Mr. M. A. Robinson, C.E., Richmond-street, Londonderry :—

R. Colhoun 330
R. Whiteside, contractor, Eglinton, co. Derry,* £250

LOOE (Cornwall).—For the construction of reservoir, pipe-laying, &c., western section of scheme, for the Urban District Council. Messrs. Thomas & Andrew, engineers :—

R. H. B. Neal	£1,950	J. Alderman, Looe* ‡	£925
J. D. Hobbs & Son	1,746		

‡ Exclusive of iron pipes, hydrants, valves, bends, and stoneware pipes.

LOUGHBOROUGH.—For the construction of an impounding reservoir of a capacity of 510 million gallons in the Blackbrook Valley, comprising a masonry and concrete dam 382 ft. in length and 108 ft. 6 in. in height from foundation to top of parapet, and all appurtenant works in connexion therewith. Messrs. George & F. W. Hodson, engineers, Westminster and Loughborough :—

L. P. Nott	£84,812 16 2	Enoch Tempest	£70,317 10 0
J. F. Price	80,186 10 0	Walker & Co., Ltd.	69,222 2 10
Joseph Tomlinson	77,711 11 11	Cooke & Co.	63,492 0 0
George Lawson	77,513 0 0	Braithwaite & Co.	62,719 15 5
Kellett & Co., Ltd.	74,816 3 2	Fotharby & Son, Burnley*	58,707 2 5
Thomas Smart	74,589 0 0		
Nowell & Co.	73,017 5 3		

MIDHURST (SUSSEX).—For the erection of house and offices, North-street, for Mr. H. W. Way, Midhurst. Mr. A. G. Gibbs, architect, North-street, Midhurst :—

H. Hutchinson	£1,155	H. Duncan, Midhurst*	£787
Gammon & Son	1,150		

MILFORD HAVEN.—For additions to schools, Great North-road, for the Steynton (U.D.) School Board. Mr. D. Edward Thomas, architect, Victoria-place, Haverfordwest :—

Davies & Son	£1,328	Russan, Milford Haven*	£1,292
Robert Cole	1,327		

NETHERFIELD (Notts.).—For new bakery, stabling, &c., Netherfield. Mr. Richard Whitbread, architect, Carlton, near Nottingham :—

Wilson	£2,110 0	Tegardine	£1,836 0
Lee	1,968 0	Harper	1,824 0
Brown & Son	1,950 0	Bell	1,818 0
Main & Co.	1,874 3	Lewin, Netherfield*	1,791 0

NEWMARKET.—For the erection of a training establishment, Moulton Paddocks, Newmarket, for Sir E. Cassel, K.C.M.G. Messrs. Heaton & Gibb, architects, Newmarket. Quantities by Messrs. W. H. Barber & Son, 22, Buckingham-street, Adelphi, W.C. :—

W. King	£17,450	Grimwood & Sons	£14,892
J. G. Cowell	16,990	H. J. Linzell	14,393
P. Banyard	16,375	J. W. Collins	14,300
J. Bentley	15,820	H. Plummer	14,194
Coulson & Lofts	15,460	A. J. Bateman	13,477
Foster & Dicksee, Rugby*	14,949		

PLYMOUTH.—For the erection of three blocks of workmen's dwellings, Prince Rock, for the Corporation. Messrs. Hine & Odgers, architects, Lockyer-street, Plymouth :—

J. P. Berry	£7,830	T. May	£7,103
Lapthorn & Co.	7,390	Wakeham Bros.	6,978
Lethbridge & Son	7,298	W. Trevena	6,683
A. Andrews	7,280	T. King	6,380
J. Griffin	7,230	H. E. Skinner*	6,349

[All of Plymouth.]

PLYMOUTH.—For the erection of a chapel, Embankment-road. Mr. H. J. Snell, architect, 13, Courtenay-street, Plymouth :—

W. Trevena	£6,978 0	A. Andrews	£6,314 0
F. G. Widger	6,839 0	J. Davy	6,308 0
J. P. Berry	6,690 0	Wakeham Bros.	6,214 19
H. E. Skinner	6,487 6	T. May	6,185 0
J. H. Blackell	6,340 0	J. H. Palmer	5,878 0
Tozer & Son	6,315 0		

PORT GAVERNE (N. Cornwall).—For the erection of a residence. Messrs. Wise & Wise, architects, Launceston :—

Richard Squire	£1,160 0	Bray & Kellow, St. Kew*	£981 10
Ferret & Werresi	1,097 0		
Lark	1,004 0		

PORTSMOUTH.—For making about 1,200 ft. new road, and laying sewers, Fratton. Messrs. Hall & Pain, surveyors, 57, Commercial-street, Portsmouth.

E. Beaton	£1,327	W. Learmouth	£1,116
F. W. Quick	1,277	Light & Son	1,047
J. H. Corke	1,220	James Crockerell*	920
J. W. Perkins	1,194		

PRITTLEWELL.—For the erection of school chapel, for the trustees. Mr. Frank E. Smee, architect, 12, West Smithfield, E.C., and Leigh-on-Sea :—

F. Smith	£895 0	F. Dupont	£845 0
Harris & Rowe	870 0	Ardley & Elvey‡	778 10
F. & E. Davey	847 0		

‡ Revised tender of £730 accepted.

PURTON (Wilts).—For enlarging the parochial schools. Mr. W. H. Read, architect, Corn Exchange, Swindon :—

Fydeman Bros.	£496 10 0	J. Shails	£285 0 0
J. Lay	410 0 0	Barnes & Son, Purton*	272 10 0
J. Williams	379 2 9		
A. J. Colborne	333 18 0		

PWLLHELI (N. Wales).—For the construction of a wharf, Pen-y-Cob, for the Town Council. Mr. A. J. Dickinson, Borough Surveyor, Church-place, Pwllheli :—

J. H. Roberts	£185	A. J. Dickinson, Boro' Surveyor*	£120
A. Hughes	170		

[Surveyor instructed to carry out the work.]

RAUNDS.—For new shoe factory at Raunds, Northants, for Mr. R. Coggins. Messrs. Mosley & Scrivener, architects, Northampton.

H. Martin	£2,772	T. & C. Berrill	£2,544
Freeman & Son	2,693	Smith & Son	2,541
R. Marriott	2,670	T. Swindall	2,530
Sparrow	2,635	W. H. Lovell	2,487
J. Lawrence	2,629	W. Beardsmore, Northampton*	2,480
F. Henson	2,550		

REIGATE.—For the erection of buildings, chimney shaft, &c., for electric lighting station for the Town Council. Mr. W. H. Prescott, C.E., Market Hall, Redhill :—

G. Woissell	£8,300	Potter Bros.	£6,500
Longley & Co.	7,389	G. Minter	5,900
Thomas & Edge	6,690		

RIPLEY.—For the erection of a dwelling-house and business premises in Grosvenor-road, Ripley, near Derby, for Mr. George Heaton. Mr. Robert Argile, architect, Oxford-street, Ripley. Quantities by the architect :—

W. Harris	£1,390 10	W. Clower, Ripley, near Derby*	£1,375 0
S. Gee	1,376 0		
W. Norman	1,375 7		

LONDON.—For making up and paving Kingswood-road (Section I.) for the Fulham Vestry. Mr. C. Botterill, Surveyor, Town Hall, Walham-green, S.W. :—

—	Kingswood-road. Sec. 1.				Buer-road.				Fulham Park-gardens, Sec. 2.			
	Roadway.	York Stone.	Victoria Stone.	Imperial Stone.	Roadway.	York Stone.	Victoria Stone.	Imperial Stone.	Roadway.	York Stone.	Victoria Stone.	Imperial Stone.
	£	£	£	£	£	£	£	£	£	£	£	£
W. Neave & Son	436	—	—	—	475	—	—	—	350	—	—	—
E. Parry	398	—	—	—	465	—	—	—	325	—	—	—
J. Mears	380	—	—	—	483	—	—	—	315	—	—	—
H. Greenham	407	—	—	—	462	—	—	—	312	—	—	—
Wimpey & Co.	405	—	—	—	478	—	—	—	318	—	—	—
Nowell & Co.	425	204	—	—	456	199	—	—	300	138	—	—
Victoria Stone Company	—	—	152	—	—	—	144	—	—	—	100	—
Imperial Stone Company	—	—	—	151	—	—	—	145	—	—	—	98

[See also next page.

RIPLEY (Derby).—For the reconstruction of Victoria-street and others, for the Urban District Council. Mr. Robert Argile, surveyor, Oxford-steet, Ripley. Quantities by the surveyor :—

Name of Street.	W. Coupe, Ripley.	Cox & Son, Ilkeston, Notts.	W. Cordon, Beeston, Notts.
	£ s. d.	£ s. d.	£ s. d.
Beighton-street ..	136 0 0	156 7 10½	166 1 2
Crossley-street ..	142 15 0	188 13 0	196 1 2
Park-street	116 0 0*	163 12 0	147 17 4
Victoria-street ..	260 0 0*	343 2 11	306 0 9
Wellington-street.	159 0 0*	239 11 5	212 17 5

ROCHFORD (Essex).—For taking down and rebuilding brick bridge, for the Essex County Council. Mr. P. J. Sheldon, C.E., County Offices, Duke-street, Chelmsford :—

T. Robinson ..	£1,690 0 0	J. & J. Jones	£980 6 6
W. & C. French	1,149 0 0	S. Parmenter, Braintree‡ ..	976 0 0
West Bros. ..	1,113 0 0		

‡ Recommended for acceptance.

ROTHERHAM.—For the erection of office buildings, show-rooms, and store warehouses, for Messrs. G. Wright & Co. Mr. J. E. Knight, architect, College-street, Rotherham :—

Green & Co.	£2,674	Richard Snell	£2,300
Robert Snell.....	2,317	James Cooper	2,300
Thornton & Son	2,315	Chadwick & Co.* ..	2,271

[All of Rotherham.]

SCARBOROUGH.—For the construction of public conveniences, St. Thomas-street, &c., for the Town Council. Mr. H. W. Smith, C.E., Town Hall, Scarborough :—

Coultas & Hovington ..	£990 8 6	Bastiman & Sons, Victoria-road, Scarborough*	£832 5 4
R. H. Simpson	897 16 5		
J. Barry	833 17 11		

SHEFFIELD.—For erecting the Queen's-road stables, &c. Mr. C. F. Wike, City Surveyor :—

Excavating, Bricklaying, and Masonry.—Margerrison, Dronfield* .....
Carpentry and Joinery.—Holmes, Sheffield* .....
Slating. — C. Chadwick, Sheffield* .....
Plastering.—C. Chadwick, Sheffield* .....
Plumbing and Glazing.—Oliver Brothers, Sheffield* .....
Ironfounding.—Moorwood, Sons, & Co., Sheffield* .....
Painting.—Mrs. Moss, Sheffield* } £9,231 13 3

SHEFFIELD.—For Croft's Working Class Dwellings. Mr. C. F. Wike, City Surveyor, City Surveyor's Office, Sheffield :—

Preliminary Excavating, Bricklaying and Masonry.—B. Hollingworth* .....
Carpentry and Joinery.—J. H. Bedford* .....
Slating.—C. Chadwick* .....
Plastering.—C. Chadwick* .....
Plumbing and Glazing.—H. Braithwaite & Co.* .....
Painting.—A. Machin* ..... } £25,564 2 2½

[All of Sheffield.]

SHEFFIELD. — For erecting artisans' dwellings, Hands-lane, Sheffield. Mr. C. F. Wike, City Surveyor :—

Carpentry and Joinery.—E. & W. Oxley* .....
Slating.—Ellis & Wetherill* ....
Plastering.—C. Chadwick* .....
Plumbing and Glazing.—Oliver Bros.* .....
Painting.—Murday & Co.* ..... } £1,856 16 6

[All of Sheffield.]

SOUTHAMPTON.—For the erection of three shelters, the Avenue, Prospect-place, and clock tower, for the Corporation. Mr. W. Bennett, Borough Engineer, Municipal Offices, Southampton :—

Playfair & Toole	£520 0 0	C. H. Brundritt	£381 2 0
Dyer & Sons ..	475 0 0	Prescott & Co..	375 0 0
Jenkins & Sons	436 0 0	Dowdall & Sons	362 19 4
Potts & Ward ..	427 15 10	T. H. Stiles* ..	295 0 0
W. H. Jerram..	385 19 4		

[All of Southampton.]

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